THE

SOUTHERN AGRICULTURIST.

SEPTEMBER, 1833.

PART I.

ORIGINAL CORRESPONDENCE.

ART. LVI.—*An Address delivered before the Horticultural Society of Charleston, at the anniversary meeting, July 10th, 1833; by* Rev. J. BACHMAN.

(Concluded from page 410)

THE subjects to which our attention as horticulturalists should be directed, are so numerous, that time will only permit me to glance at a few that have struck me as most important. Our vegetable gardens might, particularly in the winter and the spring, be made among the very finest in the world. Many of the vegetables which in Europe are raised with great care and expense in hot-houses, thrive and flourish with us in the open ground. Our turnips, carrots, ruta baga, kohl rabbi, green peas, spinach, salad, cellery, &c., can be had in perfection during the whole winter. Our melons can be sent to the New-York and Boston markets six weeks earlier than any that are produced in that region. Among the Musk-melons, several species that go under the name of Persian melons, and whose flavour is very delicious, ought to be more cultivated. There is another melon from Rio Janeiro, said to possess the flavour of a peach, which it would be well to introduce among us. The great secret in preserving these highly flavoured fruits from degenerating, is to remove them entirely from all

other plants of a similar genus, and cultivate them carefully in a field by themselves. The Irish potato, *(Solanum tuberosum)* instead of being planted, as is the case at present in our warmest sandy soils, ought, for the sake of experiment, to be planted on the coldest clay grounds. The finest flavoured potatoes are raised in cold climates—in Nova-Scotia, and in the coldest parts of England. Col. I'On, of our State, I am informed, has succeeded in preserving the flavour of the Lancashire potato, by planting it in a part of his rice-field, that is somewhat elevated. Among the turnips, the yellow Scotch, the yellow Maltese, and Hybride, have succeeded remarkably well. Cabbages can be raised the whole year round, provided the different kinds suited to the seasons are sown in rotation, and provided we choose a dry soil in winter and a moist one in summer. The impression is very general, that this species of vegetable will prove inferior, unless the seed is annually imported. This is certainly a mistake, the best fall and winter cabbage brought to our market is produced by a lady, who, for the last twenty years has been in the habit of preserving her own seed. The Cow-cabbage, from all that I have seen, I am inclined to believe, will prove a failure. The heat and moisture of our climate during summer, together with the worms that prey on their roots, prove fatal to the great majority of these plants before they are a year old. The same fatality attends the most kinds of Cauliflower when planted in the spring. This, however, is not the case, if the seed is sown in August, since in many instances a fine crop of this delicious vegetable is produced in December and January, particularly if the winter does not prove too severe. The early French Cauliflower has recently been introduced as a spring vegetable, to be sown in February, and I have seen it in great perfection, in at least, one of the gardens of our city during the last spring. The species of brocoli, called the Russian sulphur, succeeded better with us during the last winter that any other that I have seen. The plants of the Sea-kale now in a state of culture, seem fully to answer the expectation of those who have introduced them. The New-Zealand spinach, *(Tetragona expansa)* grows luxuriantly, with scarcely any cultivation. A new vegetable has very recently been introduced into Europe, through the zeal of David Douglass, an eminent botanist, under the patronage

of the London Horticultural Society. It is called the *Oxalis crenata*, the flavour is said to partake of both the potato and chesnut. It is so productive that a bulb weighing one ounce, last year produced ninety bulbs weighing four pounds. This is said to be so great an addition to our culinary vegetables, that it is supposed by some, it may in time, supplant even the potato itself. The artichoke, *(Cynara scolymus)* of which there are several very superior varieties, is a great delicacy, and succeeds well in our mild climate. The Tart rhubarb has come to perfection in a few of our gardens, and failed in others. The species called *Rheum undulatum* and *Rheum Hybridum*, are deserving of a more careful cultivation. It is probable also, that the Turkey rhubarb of commerce, *(R. Palmatum)* may be found to succeed in some of the middle and upper districts of our State

The fruit garden is deserving of no inconsiderable share of our attention. The apple does not generally succeed well in the maritime districts of our State. Still there are so many varieties of this delicious fruit, that the careful and zealous horticulturalist may yet discover some kinds that are adapted to our soil and climate. I tasted an apple about ten years ago, that was raised on Charleston Neck, on a farm now belonging to Dr. Porcher, from a tree which had regularly produced apples of a very fine flavour for several years in succession. There is an apple tree in Italy, called the Mala Cara, which is too delicate to survive the cold winter of our Northern States, that might, perhaps, be successfully cultivated here.

The Pear is another fruit which deserves our particular attention. Pear trees from the South of France appear to thrive better with us than those from the Northern States of our country. This is probably owing to their having been naturalized to a climate, which bears a considerable similarity to our own. The garden of the late Mr. Charles Florian Mey, of this city, has, for more than twenty years, produced regular and abundant crops of pears: these trees were imported from France. On the plantation of Col. Magwood, the fruit of some of our finest varieties, and among the rest the Sickle pear, came to great perfection last year. Although this is a tree, which in its natural state, requires many years of patience before we can reap its fruits, yet inoculation and grafting will generally remedy

this inconvenience. The Apricot, (of which there are many varieties) on account of its blossoming early, is subject to be greatly injured by the late frosts of spring. I would recommend that an attempt be made to retard the blossoming of these trees, by planting them in a northern instead of a southern exposure. The Peach and the Nectarine arrive at great perfection in some of the yards of our city, and in some situations in the country. The great enemy against which we have to contend in this fruit, is the insect *(Curculio)* which perforates the fruit sometimes at a very early stage, and which has heretofore baffled all our skill in finding a remedy. Our city will, probably, however, be abundantly supplied in a few years, from orchards planted in favourable situations in the country, near the Rail-Road, the fruit of which may be conveyed to our market in a few hours.

There are scarcely any of our northern Plums than can be successfully cultivated along our sea-coast in the south. The variety called the Red Gage has succeeded best, and some other kinds have done well for a year or two, in the very valuable fruit garden of Mr. Michel of this city. There is, however, a native plum very little known here, which in common with other varieties, is called the Chickasaw plum, the flavour of which is nearly equal to that of the Green Gage, that can with great ease be cultivated here, and is deserving of more of our attention.

Our situation on the sea-board of Carolina is remarkably well adapted to the cultivation of the Fig-tree. This is decidedly one of the most valuable of our fruit trees. It bears abundantly and frequently three crops in a season—is not subject to the ravages of insects or liable to be affected by our seasons. The fruit is always wholesome, and is the more valuable on account of our being unable to eat it except when fully ripe. We have, in our neglect of the cultivation of the fig, acted up to the usual disposition of man, in trying to procure that which is expensive and difficult, and neglecting that which is cheap and can be easily obtained. Some of the finest varieties of this fruit have not yet been introduced into our gardens; a little attention from the members of this Society will enable us to have a regular succession of the finest flavoured figs during five months in the year.

Orange and Lemon trees were formerly more extensively cultivated than at present. The occasional severe frosts of our winters will probably ever remain an obstacle to our being able to cultivate these fruits with certainty. The Cherry, with the exception of the wild species, has seldom succeeded well; the variety called the Morella cherry, produces better fruit with us than any other that we have yet tried. Our native kinds however, admit of great improvement by cultivation. The Quince requires a colder climate than ours, and yet, I have occasionally known this species to bear good fruit, for several years in succession. I remarked that they succeeded best on a clay soil, and in a northern exposure. There a great variety of the fruit bearing Pomegranates, all of which arrive at great perfection in this climate, and we should use our endeavours to introduce among us those varieties that are most valued in the east.

The Current and Gooseberry we are unable to cultivate.

There is a variety of our native Mulberry, (which has, however, become very rare with us) that is but little inferior to the much prized *Morus nigra* of Europe; the latter also, I have seen bearing fine fruit in the gardens of Mr. Noisette and Mr. Howard of this city. It may not be foreign to our subject to notice here the *Morus multicaulis*, a new species of mulberry tree recently introduced, which for the raising of the silkworm will probably supplant the white mulberry now so generally cultivated. This tree puts out its leaves so much earlier than the other, that they are three inches broad before those of the white mulberry begin to unfold. The mulberry tree is easily cultivated—our soil and climate are admirably adapted to its growth. Some of those that were planted by the first German Missionaries at Ebenezer, Georgia, during the time of governor Oglethrope, are still in a flourishing condition. The culture of the mulberry ought to be more attended to in our Southern country. The time may not be very far distant when the reduced prices of Cotton, in consequence of an extended cultivation, may render the raising of Silk, particularly the raw material, one of the staples of the South.

I regret to say, that my own experience, with regard to the successful cultivation of the Olive, holds out but little

encouragement. It is but seldom that amidst our varying seasons, the fruit of the olive has arrived at any degree of perfection. It is somewhat singular too, that whilst in the South of Europe, the olive is propagated with ease from cuttings from the largest stem to the smallest twig, and even from the bark itself; yet, in our Southern States, it has been discovered that it is very difficult to propagate this tree in any other way than by the seed. Mr. Couper, of St. Simon's Island, I am informed, has partially succeeded in obtaining fruit from trees imported from France.

With the Vine, we are likely to be far more successful. Whilst many varieties are not suited to own climate, others, and particularly native varieties, have succeeded even beyond our expectations. To the perseverance and skill of Mr. Herbemont, of Columbia, and Mr. Abraham Geiger, of Lexington, our southern country is indebted for much information on the subject of the culture of the grape, and it is now believed that many portions of the poorest pine barrens in our middle districts, are admirably adapted to the growth of the vine. In the neighbourhood of our city, many varieties of the grape, for the use of the table, are produced, as our several exhibitions have abundantly testified.

The Camphor tree would, I am induced to believe, stand the severity of our coldest winters. There is one that was not long since growing in the garden of the late Mr. Young, of Savannah, that appeared never to have been in the least affected by frost. The Tea-plant *(Thea virides,* and *bohea)* has by successive planting of the seeds, from year to year, been at last so acclimated in the garden of Mr. Noisette near this city, that with very little protection, it may be cultivated and bring its seeds to maturity in the open ground; and we hope soon to be able to regale the Ladies who honour our exhibitions, with a cup of their favourite beverage, procured from plants raised on our own soil.

America has recently given to the world a new fruit, called *Shephardia Argentea*, or Buffalo berry. It is of a bright red colour growing in clusters, and said to be very delicious; it may yet prove to us in the South a substitute for the Cherry. This tree, growing to the height of about fourteen feet was found on the banks of the River Platt, and on the Missouri, and was brought to us by the

indefatigable explorers of our western wilds; it has borne fruit near Boston, and two trees of this species have been for several years growing in the garden of the Editor of the Southern Agriculturist, and thus far seem well adapted to our climate.

The Strawberry, a fruit that has always been a favourite, is well deserving of the attention and encouragement of this Society. There are some varieties that are adapted to a dry, others to a moist soil. Some of them cannot endure the heat of our summers, whilst others seem scarcely affected by heat or moisture. It is more than probable, therefore, that we may find varieties adapted to the soil of every garden. I am informed that Mr. James Gaillard, of Pineville, has different varieties of strawberries succeeding each other during the whole of the season.

The propagation of new varieties of fruits from the seed is highly deserving of the attention of the horticulturalist. Some of the finest varieties of fruits in the world have been produced in our own country, without cultivation, and were discovered as it were, by mere accident. The original tree of the famed New-Town pippin, is still growing on Col. Morris' farm, a few miles from New-York, and no one can tell whence its origin. The Sickle pear, one of the most delicious in the world, was found in the meadows of a gentleman, after whom it has been named, which had long been appropriated to the pasturing of cattle. The delightful Washington plum, had a still more narrow escape. An inoculated tree was sent, I believe, from Long-Island to New-York; it did not bear for many years. During a storm, the tree was shattered to pieces and broke off below the graft. A shoot from the natural tree sprung up, and here was the first origin of a plum, which, on account of its superiority, was named after the greatest of men.

The subject of the naturalization of plants has but recently engaged the particular attention of horticulturalists in France, Holland, and England. The plan at present found most effectual in acclimating plants from warm latitudes, is to place them for a time in the hot-house; then into the green-house; after this, to remove them to the open ground surrounded by clumps of trees to shelter them from the severity of the weather, and when the plants have become sufficiently hardy these protecting trees are removed. Although I have not been successful in my attempts, ac-

cording to this plan, yet it is certain that in England, they have succeeded in cultivating in the open air shrubs and plants, which heretofore were always considered as requiring the protection of the green-house. They have now, as they inform us, growing, without any kind of protection, many varieties of the Camelia, the Tea-plant, (*Thea bohea* and *viridis*) the fragrant Olive, (*Olea fragrans*) the camphor tree, (*Cinnamomum Camphora.*) The ladies ear drop, (*Fuchsia coccinea.*) The *Oleander Splendens*, *Pittosporum*, the Myrtle and *Passiflora;* and if they can accomplish so much in the bleak and variable climate of England, how many trees and shrubs from Florida and the Indies, may we not be able in the course of time successfully to introduce into our soil and climate?

The cultivation of trees, for shade and ornament, should engage a portion of our attention, particularly in our city, where we can thus bring verdure into the air—produce an agreeable shade, and contribute to the health and comfort of our families. Among the shade trees which I would particularly recommend, as deserving of cultivation for their beauty and regularity of form—their evergreen leaves and quickness of growth, is a species of Oak, improperly called the water-oak. It is figured by Michaux, but so incorrectly, as to mislead us. It is, however minutely described by Mr. Elliott, as the *Quercus laurifolia*. A row of these beautiful trees may be seen in front of a house in Vanderhorst-street, in Radcliffeborough, in the suburbs of this city. It is very desirable also, to awaken a little more attention to the subject of respect to the dead, by encouraging the planting of ornamental trees in our grave yards. We, who have such a veneration for those who have gone down to the dust, that the poorest has his obituary, and the obscurest his monument, are nevertheless very negligent of the burial place, where sleep the ashes of those whom we most esteemed and loved. The Indian mounds in our native wilds bear testimony to the veneration of the savage for the spot where the bones of his tribe repose. The Turk removes every thing from the mausoleum of the dead, that might offend the eye, and cultivates there the trees, shrubs, and flowers, that may invite the melody of the grove, and awaken and strengthen in the heart, the hopes of immortality; and yet the grave yards of our own Christian land present a picture of barrenness and desola-

tion. Not a tree or shrub is planted there. No Cypress or Willow casts its shade, and no Rose or Narcissus decks the tomb. The Jerusalem oak, *(Chenopodium anthelmendicum)* the exotic Melilotus, the Solidago, the Thistle and Nettle, which shelter the abodes of the adder and the toad, almost present a barrier to our entrance. An attention to this subject is beginning to be awakened in our country. The clean and ornamental grave-yards of the Moravians, have long since been regarded with approbation, and the example set us at Boston, in their new cemetery, surrounded with every thing that can awaken the finer feelings of the heart, and render such a place sacred to pleasing religious meditations, ought to be imitated by other cities. Under any circumstances, we may render our grave-yards less offensive, by giving them clean paths and shady trees. Our own evergreens, the Cedar, the Palm, *(Chamerops palmetto)* and the Holly, will remind us of the sentiments of the early Christians who taught that they typified the mild and unfailing lustre of christianity so dear to the mourners' heart; and the Yew, the Cypress, and the Willow, dedicated to the silent solitude of the tomb, might convey to us lessons of instruction and comfort.

With regard to the shrubs and flowers which we may easily cultivate in our gardens, our climate is admirably adapted to those which possess as great value, on account of their beauty and fragrance, as any that the world can produce. Nearly all the plants of China, and Japan, as well as a great number of those that are natives of the Cape of Good Hope, thrive with us in the open air as well as they do in their native climes. Some of the ladies who take an interest in our Society, cultivate nearly all the variety of Roses that have yet been introduced into America. If the North excels us in the cultivation of the Crown imperial, the Peony and the Tulip, we can vie with it in the Myrtle, the Lagerstromia, the Oleander, the flowering Pomegranate, and our own fragrant Jessamine. Although the Ranunculus and the Hyacinth require some care and attention, yet they are so generally cultivated among us as to form the pride of our gardens in the spring. The fragrant *Lawsonia inermis*, (the famed Henna of the East) has been blooming for the last seven years in the open ground of one of the gardens of our city. A few of the

ladies of our city, whose public spirit deserves the warmest thanks of this Society, have with much trouble and expense, introduced among us many rare and valuable exotics, and their contributions at every exhibition of this Society, convince us that they have not grown weary in the cause.

One of the most favourite exotics now cultivated, is the Dahlia, which can be brought to very great perfection in our climate. In three of the gardens in and around our city, are found many choice varieties of this beautiful Georgina; a flower so beautiful and so easy of culture, ought to be found blooming in all our gardens. We should also pay more attention to the arrangement of the flower garden—to the planting of our bulbs and annuals, in masses, so as to insure a regular succession of flowers; for, with a little attention to this subject our Carolina gardens may be always in bloom.

The forests of Carolina abound in a vast variety of beautiful flowering trees and shrubs, which we ought to transplant into our walks and gardens, and cherish and cultivate with care. Is there a tree in the world that is in every respect more worthy of admiration than our Magnolia Grandiflora, the majestic native of our woods? Our Calico tree, *(Kalmia latifolia)*—our white flowering Stuartias, sprinkled over, as it were, with flakes of snow—our beautiful Robinias are found blooming abundantly in our mountains, and along our water courses. Our Gordonais—our sweet scented Shrub, *(Calycanthus Florida)* one of our species of Similax, and vast numbers of other choice flowers perfume the air for many miles around. Our Azaleas, Phlox's, scarlet Lobelias, Bignonias, Honeysuckles, Jessamines and Pride of the Meadow, *(Thyrsanthus frutescens)* give to the woods of Carolina, a charm which not only fills the heart of the lover of nature with delight, but causes even dullness to pause, to wonder and admire.

From this imperfect sketch it will be easily seen how much remains for this Society to accomplish. That it has already been productive of some good, is evident from the increased attention which has of late been devoted to this subject, and from the proofs which have been afforded at our several exhibitions. A lady in this city who has heretofore made a livelihood by the rearing and selling of plants, has recently stated, that such has been the demand for flowering shrubs and plants since the establishment of

this Society, that she has been encouraged greatly to extend her establishment, and is now on a visit to the North, in order to obtain choice and rare plants to accomplish this object. A few new gardens have lately been laid out, in which great taste has been displayed; and at least, one scientific gardener, thoroughly skilled in his profession, has found employment among us. From these favourable beginnings, have we not some grounds for anticipating future success?

The subjects which are to engage the attention of this Society, are all of them innocent, if they are not otherwise profitable. The God of Nature has cast our lot on this teeming earth; be ours the task of doing all that in us lies to render that earth the abode of comfort and of peace. If we do not give to man that which is profitable in a pecuniary view, we will remind him that many things may be kept rather for companionship than profit, and that every little extra tie and enjoyment makes a man's home dearer to him. The vegetables which he has raised with his own hands, in his own garden—the tree and the vine which his wife and his children have assisted him in planting—the fruits which they have admired and relished together, and the flowers which they have reared with mutual care, all serve to strengthen the bonds of conjugal, parental, and filial love.

And may we not hope, that at least, in the Floral department we may be aided by the fair hands, and the approving smiles of the ladies of Charleston. They have done so much for us already, that I am sure they require no solicitation to continue their exertions. I could wish that they might be encouraged to follow the examples of similar institutions in other cities—become members of our Society, and aid us by their experience and encouragement. Under any circumstances, it is in the power of our fair friends, not only to refine the taste of this community by their countenance, but to give a grace and a stimulus to this Society, which our own endeavours could never accomplish. Then may we expect that "this annual festival of flowers will be a banquet of delight where beauty will rule the hour," and pleasure and usefulness go hand in hand.

In endeavouring to advance the interests of this Society, we do not wish to elevate it above other institutions, whose objects are a more extended benefit to mankind, nor do not

ask the community to make any costly sacrifices to support it. We desire to give a direction to the public taste, and by enlisting it in the various subjects of horticulture, we hope to improve the morals of the people, and to add to the sum of human happiness.

We are told that the Arcadians were the most savage of all the Greeks, till Pan taught them music. We admire the fable, let us profit by the moral. By directing the minds of our people to innocent and profitable employments, by creating a love for rural pursuits and the beauties of nature, we may do much for our sunny South—we may form a population fitted to its beauty—we may be enabled to banish ignorance, vulgarity, and crime, and invite the angel of happiness and peace, to make his everlasting abode with us.

Note.—In preparing the above Address, the writer has referred to observations made in his common place book for years past. He finds that he has not always noted the names of authors, from whom his information has been derived, and is uncertain whether he quoted their language correctly. This will account for his not having been able to refer to authorities in all cases.

ART. LVII.—*Account of an Agricultural Excursion made into the South of Georgia in the winter of* 1832*; by the* EDITOR.

(Continued from page 416.)

In our last number, we gave the course of culture pursued at "*Hopeton*" with rice. The next crop in the order of rotation, which Mr. Couper has adopted, is cotton, and we subjoin his mode of culture as detailed by himself, in the notes he kindly furnished us.

COTTON CROP.

"*Preparation of the land.*—When the land has been 'sufficiently long under cultivation to admit of ploughing, 'a furrow is run down the centre of the old alley, all the 'vegetable matter is placed in it and two furrows thrown

'over it. This is done early in the winter that the frost 'may break down the soil which is generally a stiff loam, 'and that the vegetable matter may consolidate and un- 'dergo a partial decomposition by spring. Manure from 'whatever source obtained is applied in this way. Rice- 'straw, and cane-trash form the principal supply. When 'the soil is very stiff, the land is flush ploughed and cross 'ploughed during the winter, in order to pulverize it.

"Winter ploughing and half bedding have been found 'the best preservatives against the cut-worms, which are 'extremely destructive to the young cotton on new river 'lands.

"A short time before planting, the beds are completed 'by running the plough again, throwing up two additional 'furrows, and by a third furrow forming a water channel 'between the beds. The beds are then dressed by the 'hoe and are ready for the seed. On new lands the beds 'are six feet from centre to centre, and on those which are 'reduced so as to produce an average growth of six feet— 'five feet. The beds are as large as can conveniently be 'made and are of a full form ⌒⌒ ⌒⌒. The mode 'of sowing the seed is to divide the hands into gangs of 'five persons: the first, by a range of stakes, chops out 'the alternate holes; the second, chops out the intermedi- 'ate holes; the third, sows the seed, while the fourth and 'fifth cover the seeds. The chops are made ten inches 'wide and extend twelve inches across the beds. A large 'quantity of seed well scattered, is sown, and covered from 'half to an inch deep. By this mode of planting, as much 'work can be done as by any other, and the distances 'between the plants accurately fixed. The distances 'between the plants vary according to the strength of 'the soil from fifteen inches to four feet. On recently 'cleared land, open planting is the only mode of ensuring 'early maturity. As a general rule, we deem it safest to 'plant thick on worn lands producing a growth of four to 'five feet, and very open on those of exuberant fertility, 'where the cotton averages from seven to ten feet.

"When the lands are very strong, I prefer planting a '*mixed crop of cotton and corn*. The mode is to plant two 'rows or beds in cotton, and one in corn, or every third row 'in *corn alone*, Cotton Cotton Corn Cotton Cotton Corn Cotton Cotton.—

'The cotton three to three and a half feet from stalk to 'stalk, the corn single stalks eighteen inches apart. The 'object is, from the middle of July to November, to expose 'one side of each row of cotton to the free influence of 'sun and air. As the corn is turned down about the 'middle of July, this is accomplished. The corn should 'be planted very early. If the lands are strong the cot-'ton branches will nearly interlock. This combination 'of crops may be strongly recommended on very rich 'lands. And were I to plant two-thirds of cotton and one-'third of corn, I would always combine them.

"Experiments continued for three years on a large 'scale, gave an average *per acre* of 190 to 200 pounds of 'cotton, and from 14 to 18 bushels of corn, exceeding the 'proportion of either crop, had they been planted alone. 'The reasons for this superiority will readily occur in the 'different habits of the plants, and the freer influence of 'light and air which each experiences from their combi-'nation. The corn may, perhaps, with advantage, be 'planted thicker.

"Every third row in corn is preferred to the alternate 'one: as by the latter the cotton is too much shaded in its 'earlier growth by the corn. By placing the corn, the sub-'sequent year, on the beds on which the cotton was the 'previous year a partial rotation of crop is effected.

"It will be perceived that this mode bears no similarity 'to the plan sometimes followed, of scattering corn among 'solid cotton.

"The thining is commenced by opening the centres of the 'plantings, by taking out a handful of the plants, as soon 'as they begin to put out the fifth leaf, including the seed 'leaves. As soon as the plants crowd each other they are 'again thinned out to about seven. A third thinning is 'given when the plants close the spaces between them, 'and the number is reduced to three or four. At this time 'a little earth is drawn among the plants to support them. 'When six or eight inches high they are thinned down to 'two plants, and when between fifteen or eighteen inches 'high to a single stock. The rule is never to allow the 'plants to crowd each other so as to produce a spindling 'growth, but at the same time to leave a sufficient number 'to guard against accidents from slight frosts, cut-worms, 'and high winds.

"Time of planting 20th of March to 10th of April; 'earlier than the first date exposes the young plants to 'late frosts: later than the latter throws the sowing into 'the dry period of the spring.

"The hoeings are repeated once a fortnight from the 'period when the seed comes up, and are always *up*, and 'except the first deep. After the first hoeing, which is 'superficial, the beds are hauled up—adding to the sides, 'and but slightly to the tops of them. In performing this 'operation, care is taken to avoid making *sharp and high* '*beds.* We wish *full* beds with a deep sharp furrow for 'the water between them—the object sought is a large 'body of friable, well drained, but moist soil—*(our soil is* '*all strong and low.)* On clay lands, I find it very impor- 'tant to keep the surface of the ground friable and open, 'by hoeing, without reference to the destruction of grass; 'the oftener this operation is performed the better, and it 'should be from one to two inches deep. The hoeings 'should be discontinued about the end of June to the mid- 'dle of July; as their repetition after that period, by keep- 'ing up a new growth, retards maturation. We seek, by 'diligent cultivation, to hasten the growth during the 'spring and early summer months, and when the plant 'has reached a productive size, by discontinuing the sti- 'mulus, to hasten maturity. As our means of accom- 'plishing this—about the middle of August the extreme 'shoots are nipped off, or as it is technically called, the 'plants are topped. During the months of August and 'September, the suckers which appear, are removed when 'from three to six inches long. This operation completes 'the cultivation. The supposed advantages of topping 'are, earlier maturity, larger boll, the direction of the sap 'into the lateral branches which are more fruitful, and 'less dropping—disadvantage, increase of suckers. The 'removal of suckers is indicated by the propriety of des- 'troying a new and useless growth, which, by withdrawing 'the sap from the old branches and fruit, retards their 'maturity, and frequently occasions them to cast the old 'fruit.

"The *dropping* or casting of the bolls appears to be 'owing to any sudden change in the habit of the plant— 'whether it passes from extreme drought to extreme wet,

'and *vice versa*, or receives some new stimulus by stirring 'the ground, or by the recent application of manure.

"Plants growing on the edges of ponds alway full of 'water, do not cast their fruit, however dry the season 'may have been, and however wet it may be. Those 'growing on the margins of banks, which send their roots 'into the base of the bank, are also less subject to drop their 'bolls.

"I once planted a small section of a margin from which 'the stiff and poor clay from a new ditch had been spread 'out, *overlaying* the soil from four to six inches; the roots 'passed through the poor crust and extended into the rich 'soil below, and were thus placed beyond the vicissitudes 'of the seasons. These plants during a season when there 'was an unusual quantity of dropping, shed nothing.

"The oftener the fields are hoed the less dropping there 'is, because the stimulus is so frequently repeated as to 'keep up a regular and continued growth.

"The deeper and the finer the tilth of the soil, the less 'the dropping, because the lower roots supply an equal 'amount of nourishment to the plant; and a portion of 'them are always in moist ground. Lands which are 'deeply stirred, and well drained, drop less than those, 'which are thin and liable to be overflowed.

"A hoeing immediately after a rain occasions dropping 'of leaves as well as bolls. This is in a great measure 'owing to the double stimulus from moisture and stirring.

"The practical instruction from these facts points to 'the propriety.

"1st. Of repeating the hoeing as frequently as possible; 'perhaps applied to one half of the bed at a time, and 'made deep.

"2d. Draining deeply.

"3d. Deep and frequent ploughing.

"4th. Diffusing the manure through the soil, that the 'plant at any stage of its growth may receive a portion of 'it.

"The pickings vary from an average of from forty to six-'ty pounds to the hand, according to the blow in the field.

"The average crop of the last six years has been one 'hundred and fifty-three pounds to the acre; during that 'time one crop was almost entirely destroyed by hail.—

'Excluding that year, the average has been one hundred 'and seventy-seven pounds. Three of the crops have 'averaged more than two hundred pounds.

"The preparation for market consists of assorting, gin- 'ning by Eave's horse-gin, passing through a whipper 'after ginning and moting. The gin, when in order, ave- 'rages six hundred pounds of clean cotton per day. Nine 'hundred pounds have been obtained in one day of eleven 'hours, and seven hundred and twenty pounds for twenty- 'two consecutive days."

We have already given an account of Eave's gins in a former number, and shall not, therefore, detain the reader longer than to state, that they are on this place propelled by animal power, placed below. The whipper is worked by the same force. The cotton is taken up into the upper story, where it is thrown into the whipper in certain quantities, which after receiving a certain number of strokes, is thrown out. This is effected by a very simple contrivance, which after a certain number of revolutions of the spokes, opens the door and permits the cotton to escape. It remains open but for a short time and then closes, until the revolutions are again completed. The rollers for Eave's gin are rather troublesome to make, owing to their great length; this, however, is in some measure obviated, by an instrument accompanying the gins, which, on receiving the roller in its rough state, shaves off all the superfluous wood, until of a certain size, when it passes through a hole made of the size necessary for the roller to be. But even this is troublesome, and to obviate it, Mr. Couper has fixed in the loft of the gin-house, somewhat in the manner of a lathe, with a band attached to one of the wheels used for the gins. All, therefore, that the attendant has to do, is to fix a rough roller in this machine, and draw on the band—he need not trouble himself further, but may attend to other work, for when the roller is finished, the band is thrown out of geer and runs idly on a loose whirl.

Before closing our account of this crop, we wish to call the attention of our readers to the topping of the cotton plant, in order to check its too luxuriant growth and force it to mature its pods. We found the practice to be common in that part of Georgia we visited. It requires

judgment in its use, and is not to be resorted to at all times or in all seasons, but only when the plant is very luxuriant, and there is some fear of its continuing its growth so long as to leave but little time for the maturing of its pods. There is some diversity in opinion as to the proper time of performing this operation, but all concur in stating that when judiciously done, the advantage is very manifest. We are aware that topping of cotton is not new in this State, it has been tried, and we believe abandoned, principally on account of its causing a new growth, of what are termed *suckers*. This will be the case whenever the operation is performed at an early stage, but is not so likely to occur when done late. What we wish particularly to notice is, the fact that the production of suckers is not so much dreaded there, for their removal is considered easy, and enters into the calculation of work to be done. We have often seen our planters in despair, because a second growth had made its appearance, owing either to too much rain—the plants being violently agitated by high winds, or other causes. We do not recollect a single instance in which any attempt was made to remove these suckers and force the sap to resume its original course. This is easily accomplished, much more so than is usually thought, and there can not be a doubt but that the removal of these would prove highly beneficial, and perhaps, check, if not prevent the dropping of the bolls.

(To be continued.)

ART. LVIII.—*On the Advantages and Disadvantages of locating a Planting Interest in the Southwestern Prairies.*

Dear Sir,—To your inquiry about the Prairies of the West, and the prospect of a cotton planting interest being located on them advantageously, I reply willingly as to any supposed trouble it may give; my reluctance has arisen, from not being sufficiently acquainted with the country, to

speak with the confidence of correctness that ought to make it a guide for any one. I have only seen the Prairies of Alabama, in the counties of Montgomery and Lowndes, and have tried to ascertain the composition of the soil, and the effects produced on it by heat, drought, and moisture, so far as connected with their productions. The Prairies mean the lime lands, and cover a large portion of the surface of the middle parts of that State, and are divided into the wooded and bald, (or unwooded Prairie) which are so interspersed, that in one thousand acres together of the most wooded, there will be from one-third to one-fifth of bald Prairie, and in the most bald, a similar proportion of wooded Prairie. To speak generally, the Prairies are healthy, high, dry, and very undulating, presenting but few levels and no savannahs; the hills bald or unwooded, and covered with a dense growth of grass and weeds, furnishing coarse but excellent pasturage; the sides of the hills, beginning at about one-half of their declivities, with the intervening valleys (there called slues) wooded, with the soil of jet black colour, which sometimes extends over the whole hill, though very often the bald parts are the colour of lime; the crown of many of the hills to the space of half an acre, covered with the pure lime rock in lumps, which, on calcination, makes excellent lime, and in great abundance. The sides of the hills and slues are very properly considered the best lands as to fertility, durableness and exemption from rust. The black soil, and that growth which shows rich land here, is considered the best, and the close or stiff soils, if such a term can properly be applied to lands so very loose, are to be preferred as being more certainly free from the rust, a disease to which cotton is very liable in the bald, and in some kinds of the wooded Prairie, after long use.

There are also some Prairie swamps, or levels of considerable width, very rich indeed, and very closely covered with a dense growth of canes, (much of them more than thirty feet high) and a heavy growth of large timber. These lands, as well as some others, often present uniform inequalities over their general levels, resembling the lairs of large animals; the Indians say they are Buffalo beds, they are called the Hog-bed lands, and are considered the evidence of superior quality. But small portions of these lands have fallen under the stroke of the axe,

from their difficulty of clearing, and being liable to be overflowed by the quantity of water which is precipitated on them from the very broken country about them.

This embraces the general character of the surface of the country. The soil presents on and below its surface, oyster and other sea-shells, and the petrified remains of fish, and shews evidently that it was once covered by the ocean. It is for many feet in depth a mass of rotten limestone, in all the various situations in which it has been placed by the chemical action of heat and moisture, and by the decomposed vegetable matter. Those soils are best where there is the most vegetable matter, hence the woodlands that pay for their tenancy in the soil the annual contribution of their leaves, are better than the bald Prairies who receive only a scanty contribution from their decayed grasses. The soil is a powder which dries quickly on its surface for an inch or two, and in dry weather is all over in small cracks and looks very dry and husky and unfit for vegetation; but below its surface, two inches, or below where the plough has reached, there is a perpetual moisture. The soil works up under the fingers without grit and very much like putty. From a casual observation of the black light inland swamps of the lower country of this State, I would say, there was much resemblance between them as to appearance, but to appearance only. This quality in the soil causes the Prairie to bear drought surprisingly, and good crops of cotton and corn are made on them, in seasons that cut short the product of other lands.

This fineness of soil prevents the percolation of much water through it, hence, in the rains of winter, when but very little evaporation is going on, it makes the worst roads imaginable; so much so, that it is a material deduction from the value of any plantation, that should be more than ten miles from navigation.

This fineness of soil, which prevents its absorption of water to any depth, I think the cause of another mischief. It prevents the gradual feeding of the wells and springs, and in dry summers they go dry to an extent on some few plantations, to require water to be hauled to the people in the fields, and in extraordinary years to be hauled to their settlements. It is very common for stock to suffer much for the want of water. So soon as the warmth of spring is felt and evaporation begins, the roads improve surpris-

ingly and become good, and the lands become dry; and when once well ploughed up in the spring, become as light as an ash-heap, or as lime itself, which it is, and no subsequent weather ever puts them out of order, except for a day or two from some great rain. You can generally plough the day after a hard rain.

The soil being so lose and light makes it very liable to run its surface off with every rain, and I do not think that horizontal ploughing would save it, nor the means usually considered effectual here. I have tried cotton stalks and bushes up-a-slope without effect that would have been sufficient here. You cannot ditch with the spade in the Prairie, you would make as much and very similar progress in a barrel of pitch. With all this liability of your lands to wash, it will be a long time before you will lose its soil, for it is very deep. I find the opinion entertained by intellignt gentlemen, that the fertility may be restored by the chemical action of the sun and air without putting vegetable matter there. This looseness of soil and want of retention of moisture at the surface during the crop season, makes the Prairies the kindest and the easiest land to work. I would prefer to make a crop on them in an ordinarily good year, to preparing for one here. You can very well cultivate one-fifth more land to the labourer, and gather two-thirds more of cotton. The reason why you can gather more is because the cotton pod in that soil and climate matures perfectly, and opens so wide, that the whole contents of the boll comes out at a touch of the fingers; when, here, it is drawn out at two pulls, and sometimes a third; another reason is, that you commence picking about a fortnight earlier than here, and this time in the long days of August, is equal to one bale of our weights to each labourer; and yet another reason is, that knowing that the amount of the crop depends on the gathering, all other works are so arranged as not to interfere with it.

I think the country more healthy than this, owing in part to its being more high, dry, and broken, and more under the strong influence of the trade winds; but there must be a farther reason, because I have seen local causes enough to produce sickness here, in spite of the general causes of salubrity, that did not produce it there. Families reside with security on their prairie plantations all

summer, in the midst of extensive clearings of rich land. I think it must come from some purification of atmosphere arising from the immense quantity of lime on and near the surface of the soil. The other lands in that country under similar circumstances, are not more healthy than here. The waters on the Prairie do not corrupt, it is disagreeable to the taste, and both cathartic and diuretic in its effects on a new settler, but after a few weeks he becomes reconciled to its taste, and many prefer it to other good water.

I have now given you a candid, and to the best of my observation, a correct statement of the advantages and disadvantages of a Prairie plantation. It is a disagreeable winter country and a pleasant summer country. Your settlement would be more agreeable off the Prairie, and the nearer to navigation the better; your cotton once on the river bank, finds a ready and expeditious way to market at a dollar a bale, for all distances above one hundred miles in a direct line from Mobile. Mobile furnishes a good market for its sale, though, perhaps, not equal to that of Charleston. I think it the most conveniently built town for business I have seen, and destined to increase more rapidly than any other in the South. The country is neither well wooded nor watered, and is rather liable to the visits of hurricanes and tornadoes, and your buildings and fences decay sooner than here. I think these objections overbalanced by having a climate more pleasant, from having more air than this, and you are secure in health to your family and slaves, and can more easily make much larger crops, and get them as cheaply to the market of sale. A reasonably good planter on a good plantation ought to average from 1500 to 2000 pounds of clean cotton to the labourer each year, with provisions to raise hogs enough to kill one for each labourer, and some to spare. Your lands will yield you from eight hundred to twelve hundred pounds of seed cotton per acre, and from thirty to forty bushels of corn, and on an improved plantation, will cost you about ten dollars an acre. I think the Prairie, incomparably, the finest corn and small grain upland in the South; and the bald, which sometimes rusts the cotton too much for profitable planting, never produces the less corn on that account; if, therefore, in selecting a wooded Prairie plantation, you are compelled

to take only as much bald Prairie with it as may be needed for your corn and small grain crop, and it lays in such a manner that it can be so used, it ought to deduct but little from the value of the place.

It remains for me last to say something about the rust in cotton, but of which I really know nothing. Some suppose it to proceed from the causticness of the lime from its deficiency in vegetable matter, and if so, it will be likely to increase and attack the wooded Prairies so soon as successive crops shall have exhausted the vegetable matter in them. This may be postponed for as long a time as most lands would last, by the thrifty mode of listing so generally practised in this State. Others suppose it to arise from the extreme looseness of the soil, and its disposition to granulate rather than pulverize, and not hold in so closely about the small roots of the plant; and that a remedy will be found in not breaking the surface of the beds too near the plant, and not stirring too deep and too near with the plough. We have the same disease here, which has been increasing for the last two years, and is within the last few days shewing itself, it neither proceeds from lime nor the deficiency of vegetable matter, for we have none of the former, and it is generally worst in our newest lands, where, of course, there is the most vegetable matter.

This letter has been spun out to a very unreasonable length, and yet I could not be shorter, and give many of the particulars that I believed one would wish to know, that might have thoughts of settling in the West. To change your home and sever the many dear and tender ties that bind you to the friends, and the society in which you have long lived, requires you to reflect well, and be sure that the advantages preponderate much. If you are doing well, you had better remain, is the advice of

A PLANTER.

June 28, 1833.

ART. LIX.—*Comments on Q. E. D's Observations on Reclaiming Rice Lands; by* Q.

I am glad to see men of experience, such as your correspondent Q. E. D., recording their practical knowledge, and inviting others to report their observations and improvements. If in doing so, your different correspondents would but state their difficulties and failures, with reflections on the causes of such troubles, the obligation would be greatly increased, for we then should be cautioned as well as instructed, and saved from imprudent experiments.

The plan for reclaiming rice-lands recommended by Q. E. D., is in most respects highly judicious and valuable, but if I am correctly informed, it is deficient in one circumstance of importance. In constructing his bank, he says nothing about the intermixing of highland earth with the mud. Mr. Myrick, one of the gentlemen designated by Q. E. D., as possessing great experience in this branch of plantation work, told me that he considered such mixture indispensable to the permament duration of the bank. In the rush lands and others abounding with the light vegetable matter, there can be no doubt about excluding such perishable stuff from the bank, as much as possible, and constructing with mud and highland earth. But even where clay or mud is most conveniently situated, it is best to bring highland earth, even from a distance, to consolidate the bank and render it more durable. It is well known that clay or mud drys, cracks and settles beyond the belief of those not accustomed to it. That clay contracts in every direction, is undoubtedly true—not only in elevation, which is observable to all, but in length also, occasioning transverse cracks and fissures in the bank. Let any who doubts this, make the experiment by filling two equal spaces, one of them with mud, the other with highland earth and mud, in about equal proportions, separated by boards or some such distinct line. Let a sufficient time be given for the shrinking and drying of each parcel of earth, which I would suppose from four to six months; and I predict that the extent of separation at each end, from the board partition, will in the bank of mud exceed that of the mixed earth, and far exceed the expectations of the experimenter.

As in making bricks of clay, it is necessary to add a portion of sand to prevent cracking, so in making a bank or any thing else of clay, it is equally necessary to prevent cracks from unequal drying and irregular contraction. Mr. Alfred Huger who has also great experience in banking rice-land, told me that he found it indispensably necessary to construct his banks of highland earth and mud intermixed. Should not the top of every bank be invariably covered with the highland earth, to fill the innumerable cracks forming constantly in the mud, and prevent it from being blown away, when it becomes a very fine dust from drying? Mr. Myrick's plan is, however, a modification of this mixture, he does not add the highland earth in layers, or indiscriminately mixed, he thinks it best in the middle of a bank, vertically from the foundation to the top; and the two sides plated or sloped with mud. His reasons, as I understood him, were not only to prevent the cracking and mouldering, but to prevent the perforations of crawfish and other animals, and to save the banks from being washed in the spring tides, and when the fields are flowed. The muddy sides resist the friction of the water, much more effectually than highland earth, or any mixture with it.

But there is another part of the process of banking, which appears to have been overlooked by your excellent correspondent Q. E. D. It is as to the proportion of the base to the height of the bank. This, in the ordinary level of banks is not very important, but in deep places, as in crossing creeks and filling gaps, it is all important. I have been told, that the base should never be less than three times as great as the height, and some have even said four times that of the height: the want of attention to some such proportions, is the chief cause of the banks breaking at these weak places. These places are relatively weaker than other parts of the bank, because water acts against them by its weight. In deep places the force of the water against a bank, is greater than the superficial pressure of water, in proportion to the weight of a square foot of water at the surface, and the weight of a column of water of one foot square extending from the surface to the bottom.

Q.

ART. LXX.—*On the Hessian Fly; by* THOMAS PARKER.

"Rockey Grove, Abbeville District, 8th July, 1833.

Dear Sir,—To an upper country planter, whose interest, in consequence of his distance from a sea-port or market town, compels him to attend to those small matters which seem more appropriately to belong to a farmer, and without attention to which it would be difficult for him to make himself and family comfortable, a wheat crop is of much importance. Unfortunately, this crop is very liable to failure, especially in the Southern States, from causes which do not at all, or not as seriously effect other crops; so much so, that I have, during the time I have been cultivating it, lost, totally, exactly one crop out of every three; beside, having at other times my crop much shortened. I have been, however, in this respect, more unfortunate than the majority of my neighbours, but several have sustained fully as great and frequent losses with this crop as myself. These causes of failure are the fly, the rust, (which I believe in Virginia is called the copper) and the late frosts, which, from our very variable climate, frequently occur as late as the month of May, and which affect wheat when in joint. For the purpose of inviting discussion on the causes of failure, and eliciting the opinions of others, I will offer you my views on the subject as far as I have formed any, and notice opinions thereon prevalent in my neighbourhood, and those elsewhere which I have heard of.

The fly first made its appearance in America, at the North, during the revolutionary war. Either from the supposition that the Hessian troops had brought it over with them, or from the angry feelings with which our forefathers viewed these hireling soldiers as intermeddlers with what was considered a family quarrel, this insect got the name of the "Hessian Fly." In 1787, they did incalculable damage to the wheat crops in Pennsylvania and Maryland; since which period they have gradually travelled South and West, and made their appearance in this neighbourhood about twelve years ago, since which time their depredations on the wheat crop have increased until it amounts to a serious evil. They are a small fly, not half the size of the common house fly, in shape like the locust,

of an ash-colour early in the spring, but afterwards of a greenish hue. They appear to have no instinctive predilection for any particular plant, but impregnate grass, plants and shrubs indiscriminately. Some are injured by them, others are unhurt; to wheat they are most destructive. They complete two generations in one year. In the autumn, they deposit their egg at the root of the wheat at the surface of the ground, which becomes a maggot, and is transformed into a chrysalis before the cold weather sets in, in which state it remains until the spring, when it is transformed into a fly, which now deposits its eggs near the roots and at the joints of the wheat after it shoots, and which is found in a chrysalis state in the time of harvest, and becomes a fly in a short time afterwards.

The autumn fly is *said* to be most destructive; but from the information of a "Planter" of this district, who sowed his wheat too late to be impregnated by the autumn fly, and yet, had it destroyed so much by that insect as to render it unworthy of being harvested, as well as from what my wheat has suffered, I hesitate not to say that the spring fly does sometimes destroy the wheat crop totally, whilst at other times, it only partially injures it. When the wheat is highly impregnated in the autumn, it will not even shoot in the spring. I this year lost one field of eleven acres of wheat by the fly, (which, induced by particular circumstances, I ventured to sow earlier by one or two weeks than usual) so completely, that if every plant which had shot up and produced heads had been collected and placed together, they would not have covered a quarter of an acre, as it should be. Wheat will sometimes shoot up strongly in the spring and give promise of a full crop, but a great many stalks will not produce heads, and of those that do, numbers, in proportion to the injury received, will fall down and not mature, so as to occasion sometimes a total loss. If the stalk is examined, many of the flies in a state of chrysalis will be found at every joint under the outer covering, and also near the root of the plant. I have not formed the opinion that when wheat does not shoot in the spring, its destruction has necessarily been occasioned by the autumn fly, for such an effect may, perhaps, be also produced by the spring fly where they have attacked the wheat very badly; but whenever any of the chrysalis is found at the joints of the stalk, I

think the inference is irresistable that the spring fly has had some agency in the business. How is this devastation to be avoided? If the natural history of the Hessian fly, above attempted, be correct, and I believe it to be so, having paid much attention to the subject, there can then be no doubt but that the destruction occasioned by the autumn fly may be completely avoided, by not sowing wheat until late in the year; either, just preceding cold weather, so that the wheat will not appear above ground until after one black frost, or wait until a killing frost has actually occurred. But it may, and has, and will again be asked, if you steer clear of Scylla *in this way*, how will you avoid Charybdis? If you sow your wheat *late* to escape your autumn fly, do you not run a great risk of having it destroyed in the spring, or early part of the summer by the rust, as the later wheat is coming to perfection, the more danger is there of that disease? This may be so; but I have arrived at the opinion that this danger is not as great as is apprehended from late sowing, and may to a great extent be avoided. I have seen Lawler wheat sown in August totally destroyed by rust, and the same kind of grain sown in November, entirely escape it. But the rust, I will remark on upon another occasion, and confine myself upon the present to the fly. I am, therefore, decidedly of opinion that by the late sowing, say from the 15th of October to the first week in November, in this State, the autumn fly may be avoided, and in this opinion I am supported by every agriculturist in my neighbourhood with whom I have spoken on the subject, and by others. But how shall it escape the spring; for although we can avoid the autumn fly by sowing late, we cannot, in that way, escape the spring fly? Steeps of various sorts have been recommended as specifics against the fly, but I have no faith in them for this purpose. No doubt they may cause the young plant to shoot with more vigour at first, and are so far beneficial, and their effects may even be felt for some time. They may also be very beneficial where any disease exists in the grain, as the smut, &c.; but how they can affect the fly, the egg, the maggot, or the chrysalis, which have nothing to do with the steeped grain, and not even with the plant which springs from it until several months after it has been steeped, sown and rotted, does appear so unreasonable to me, that I not only

cannot believe it, but would not have noticed it, was it not that such an opinion is held by some. A very intelligent, observant, and experienced planter in my neighhood, has remarked that wheat sown amongst cotton has not suffered from the fly, which he thus accounts for: He thinks the fly is not partial to the cotton, and as that crop is to a greater degree than any other kept free of grass, the fly finds nothing in the field on which to deposit its egg in the autumn, consequently there are no flies to be found there in the spring, or but few, and so the wheat escapes the spring fly. Now if this be so, it would seem that a remedy, at least to a considerable degree, has been discovered against the spring as well as the autumn fly, which is to *sow wheat after a black frost, on ground which has since the time of harvest been kept perfectly free from all vegetable growth, (a plan which I find is strongly recommended for this very purpose in the Domestic Encyclopædia); or it may be sowed in a cotton field which has been well worked and kept perfectly clean.* In reply to this, however, I must remark, that the eleven acres of wheat I so totally lost this year, was sown in a cotton field; but then, again, it must be remembered, that I sowed early in October, and that the cotton fields were last year uncommonly foul with grass, which came there after the crop was laid by, occasioned by the drought throughout the summer, and the continued rains in the fall, when the cotton was too large and old to be worked.

Respectfully, yours,
THOMAS PARKER.

Art. LXXI.—*On Manures; by* Tyro.

"Richmond County, (Geo.) April 15, 1833.

Mr. Editor,—I shall offer a few remarks on the subject of collecting and applying manure, and I assure you, Sir, that it is a very *fruitful* subject, though I may not be able to manage it as experimentally as I hope some day to do; yet, now I shall say only what I know.

My method of accumulating manure is pretty much the same as that practised by your Columbia County correspondent W. A. G., whose excellent essay may be found in

the March number of the present volume of this journal. I differ, however, from him in two or three particulars. First, I disapprove of *mud* as an auxiliary to the compost, it is apt to cake, and the other materials do not mix well with it. I think it a good manure, and prefer applying it to the poor light and sandy parts of the land as we haul it from the rich bottoms where we find it. I prefer my lots stationary; the manure is more easily taken up—the spade passes on to the firm ground between it and the manure, and the operation of loading carts is more neat and expeditious. It is *my opinion* that the most economical disposition that can be made of corn and cotton stalks, is to chop them down and plough them in, leaving them on the spot where they grew, to do their share of benefit to the soil. While from the woods we have an inexhaustible supply of leaves, and which is one of the best materials for compost; it is true, all vegetable matter that will readily decompose, and all animal substances are good manure, but they are not so cheap. Leaves are very cheap, all the cost is, to haul them, and it is incredible, to those who have no experience in the matter, what a quantity of manure can be made from them, on a place where a good number of stock is kept.

This kind of manure is best for cotton on light land, it does not act powerfully but regularly and continual. For the last few years I have had about ninety acres of land under a regular system of improvement, and I now have much encouragement to go on. The first year I manured I felt disheartened, because I had made too great calculations—I expected too much—but now the improvement advances upon me to my astonishment, and I am well paid for its delay. The quantity of manure I applied to fifty acres of land this last spring, was about a thousand ox cart loads in the drill. I have accumulated and applied nearly this quantity for the last three years, and now see no reason why I should fall off. I alternate between a forty and a fifty acre field—plant two years on the same bed. In 1830, I manured the forty acre field—in 1831, the fifty acre field, and planted on the old bed of the first field. In 1832, I manured again the forty acre, and planted on the old bed of the fifty acre field, and so on. I find trays the most convenient implement for carrying the manure from the pile, and spreading it in the drill. In mak-

ing my compost I do not have the lots *raked* up and thrown into heaps, but let it lie on the ground evenly until I haul it out. Some may object to this and talk of *loss*, and tell you of vats and stercorarys and *fixings*, but I feel willing to submit to some loss if it should be so.

In a lecture by Sir Humphrey Davy, on manures, he says, "too great a degree of fermentation is very prejudicial to the composite manure in the dunghill, it is better that there should be no fermentation at all before the manure is used, than that it should be carried too far," &c. It is also stated in this lecture, that manure in its recent state is as good, and goes twice as far. We also hear it and read that earth should be thrown on dung heaps, to absorb the gases that are disengaged, &c., if this be all true, and I do not doubt it, why not throw the manure into carts and haul it to the field, and then cover it in the drill rather than have it thrown into heaps to decompose? I know much labour is saved in the former course, and I believe from the observation I made, that it is ultimately the best. Well rotted manure will act immediately and soon be lost while the other will yield its benefits slowly, but certainly. The period has nearly arrived when the tiller of the ground finds he has almost a barren soil to cultivate his crops on, and if he pursues his usual course, he must diminish in wealth; the remedy is obvious, and when once commenced will not be abandoned.

Respectfully, TYRO.

ART. LXXII.—*On the Preservation and Culture of the Long-leaved Pine, recommended to the attention of Planters near the Sea-Coast.*

The Long-leaved Pine,* which formerly grew luxuriantly on the whole sea-coast of the State, is now disappearing rapidly. The destruction of this valuable kind of timber, was accelerated about 30 years ago, by a species of insect, perforating the bark near the roots, and thus obstructing the circulation of the sap. Millions of trees were lost to the proprietors at that time, and their places supplied by a description of pine, which rots so rapidly, that it is not

* Pinus Palustris of Linnæus and Elliott. Pinus Australis of Michaux.—*Ed.*

worth the time and trouble of making a fence with it. On some places, as I am told, the expense and difficulty of fencing is so great, that the planters have given up their stock of cattle, rather than be at the trouble and cost of pasture and field fences. Has not the value of land fallen in consequence? Who, on offering a plantation for sale, is not met with the questions, what fencing timber has the place? How much long-leaved pine is on the tract? &c. If obliged to answer in the negative, is not the property less saleable on that account?

There is an evident difference in the quality and durability of pine timber; even of the long-leaved pine; even in trees of the same diameter and height, some being mostly of sap, while others are nearly all pitch-pine or lightwood.

My object is to excite a greater interest in our planters relative to this valuable pine.

1st. To ascertain precisely the means of distinguishing a durable lightwood tree, before it is cut down, from one that is sappy.

2d. To ascertain the probable cause of that difference between trees growing by the side of each other.

3d. To adopt measures for rendering all such trees equally durable and valuable as timber—equally pitch or lightwood trees.

4th. To try whether on these principles, even the lob-lolly-pine,* may not be improved in its nature, and become of more value, from being rendered more durable.

5th. To promote the growth or cultivation of the long-leaved pine in our old fields and pasture lands, now useless and lying waste.

I have been told by the most experienced, that they can always distinguish a sappy pine from one of lightwood, by inspecting the top and branches. I have likewise been told by a gentleman of observation, engaged all his life in the lumber trade, that he can always tell when the part of a tree usually sappy, is converted into lightwood or become pitch-pine.

I would here recall the attention of planters and others to the circumstance, that whenever a pine root is seen crossing a road, it is invariably lightwood. Likewise that every tree by the road side, bruised by cart wheels, or

* Pinus Taeda. Linnæus.—*Ed.*

other accident, becomes more or less lightwood in proportion to the extent of such injury. I would likewise ask whether such injuries to a tree, do not sometimes cause the branches or limbs to perish, while the tree itself survives?

A thick bushy top with large branches, always designates a sappy tree, and the reverse is equally true, that a small top distinguishes the lightwood trees. Bruises on the bark of the pine are always attended by the diffusion of pitch through the sappy part of a tree; and whenever such pitch is discovered, some bruises or other injuries may be observed on the bark and wood of the tree. That these consequences are so uniform as to become rules in selecting timber, I have no doubt; and that other uses may be made of the discovery, I will endeavour to show. Believing as I do, that in sappy trees the vigour and substance of the body is exhausted, and carried off or consumed, by the large luxuriant growth of the top branches, I propose two series of experiments to ascertain whether art may not imitate nature, and improve the value of pine timber, by converting into pitch-pine, that which would otherwise decay rapidly from being sappy.

1st. I propose that a certain number of pine trees be selected, and when about 30 feet high, that the branches be cut off close to the body of the tree. That this be done at four different seasons of the year, as in February, May, August and November, and the trees distinguished by numbers to show the season when so trimmed.

2d. That a similar number not trimmed, be bruised with an axe near the roots, half round the trunk, at similar periods of the year. That some of these be bruised also round the other half the tree, six months after the first bruising, and left for future observation of the results. The bruising which I propose, should of course, be different from girding, as that would destroy the tree. The space of an inch between each blow of the axe, would probably intercept the circulation of the sap sufficiently without suspending it altogether, and the sappy part of the tree above these bruises will be found filled with pitch, while the other half, if unbruised, will remain sappy.

3d. To ascertain the effects of these experiments, it will be necessary to cut down one of the trees deprived of its branches, and one of those bruised, for the purpose

of comparing them with each other; and of comparing both of them, with a third tree of the same size, growing in the same neighbourhood, but untouched by the axe, either in its branches or trunk. For this purpose each of these trees should be hewed or sawed lengthwise, so as to exhibit the relative changes, if any, and the extent of the change in the height of each tree. A similar examination may be made at two or three different periods of the year, and several years successively, so as to ascertain not only the extent of the change, but whether that change be permanent or transient. Another object would be obtained by this occasional examination; it would show how soon the change, if any, is brought about; whether in one, six, or twelve months; and would instruct the planter, who may want durable timber in the winter, for fencing or building, that he should designate and prepare the trees a certain length of time before they are wanted for use.

It appears to me that such experiments would cost little or nothing, either of time or trouble to the planter, and would be to most of us, a source of lively interest, curiosity and profit. The timber would not be wasted or lost; it would all be worked up in plantation uses, as in boards, scantling, shingles, palings, and rails. Here, too, would arise a new source of interest and attention. By alloting each to a different inclosure or part of an inclosure, the planter could mark the relative duration and rotting of the wood from each tree, so cut, not only for inspection but for use. All planters are interested in these results, and to most of them it would be a source of amusement, particularly to those who reside all the year on or near their plantations. These experiments were originally proposed for the long-leaved pine, but they are equally applicable to the loblolly pine, and much more necessary, where a planter has no other kind. If both kinds could be brought into comparison, the conclusions would be the stronger and more satisfactory; but for this purpose all should be put on an equal footing. I need not mention to a planter, that leaving the bark on pine wood tends greatly to promote its rapid decay, and *vice versa*.

The object of this paper, being to ascertain the best means of obtaining durable pine timber on every plantation; I would next inquire whether the long-leaved pine is not well worth cultivation, at least for plantation uses?

Is it not much better to strew an old field with the mast of long-leaved pine, than leave it to grow up in weeds, briars and brush? If more is necessary than to strew the seed of long-leaved pine in this way, surely very little more attention would answer the purpose. I would propose that, in the months of September and October, when the seed is said to be matured, a servant should be sent with a horse and cart, to the plantation of some friend where the long-leaved pine abounds, with a note to him or to his overseer—that he cut down a good tree of this kind and fill his cart with the burs, whether open or not, as they open and shell when dry. That when the crop is harvested let any old field be slightly ploughed for the purpose, then strewed with the pine-seed, and as slightly harrowed, to cover the seed from birds, &c. No further care need be taken of it, except preventing the inroads of fire. This may be done effectually, by hoeing a margin round, and drawing off the weeds, dead grass, and trash, at least once a year, in the winter season, when the time can be well spared for the purpose. If you expect a field or clearing to be covered with a growth of pine, why should not that kind of pine be preferred, which will be so much more durable and valuable than the loblolly?

If found practicable and advisable to cultivate this valuable tree on a small scale, why may it not be also cultivated extensively? As the native forests of pine recede from the sea-ports, and from the water-courses, the value of timber will increase with the scarcity, until it be finally found necessary, to send for supplies of timber to other States, and pay extravagantly for the freight, insurance and agency. Thousands of acres of old field, are now overgrown with loblolly, which on being cut down, might have its place supplied with the much more valuable pitch pine, always in demand for building, exportation, steam engines, furnaces, &c. Without the timely cultivation of the pitch pine, are we not likely to lose the supply of such fuel, for these valuable purposes, and possibly be deprived of the advantages resulting from steam enginery?

AN INQUIRER.

PART II.

SELECTIONS.

Art. LXI.—*The Vices, and Disagreeable or Dangerous Habits of the Horse.*

[FROM THE LIBRARY OF USEFUL KNOWLEDGE.]

(Continued from page 432.)

Vicious to Clean.—It would scarcely be believed to what an extent this exists in some horses, that are otherwise perfectly quiet. It is only at great hazard that they can be cleaned at all. The origin of this is probably some maltreatment. There is a great difference in the sensibility of the skin in different horses. Some seem as if they could scarcely be made to feel the whip; others cannot bear a fly to alight on them without an expression of annoyance. In young horses the skin is peculiarly delicate. If they have been curried with a broken comb, or hardly rubbed with an uneven brush, the recollection of the torture they have felt makes them impatient, and even vicious, during every succeeding operation of the kind. Many grooms, likewise, seem to delight in producing these exhibitions of uneasiness and vice; although when they are carried a little too far, and to the hazard of the limbs of the groom, the animals that have been almost tutored into these expressions of irritation, are brutally kicked and punished.

This, however, is a vice which may be conquered. If the animal be dressed with a lighter hand, and wisped rather than brushed, and the places where the skin is most sensitive be avoided as much as thorough cleanliness will allow, the horse will gradually lose the recollection of former ill-treatment, and become tractable and quiet.

Vicious to Shoe.—The correction of this is more peculiarly the business of the smith; yet the master should diligently concern himself with it, for it is oftener the consequence of injudicious or bad usage than of natural vice. It may be expected that there will be some difficulty in shoeing a young horse for the first few times. It is an operation which gives him a little uneasiness. The man to whom he is most accustomed should go with him to the forge; and if another and steady horse were

shod before him, he might be induced more readily to submit. We cannot deny, that after the habit of resisting this necessary operation is formed, force may sometimes be necessary to reduce our rebellious servant to obedience; but we affirm that the majority of horses *vicious to shoe* are rendered so by harsh usage, and by the pain of correction being added to the uneasiness of shoeing. It should be a rule in every forge that no smith should be permitted to strike a horse, much less to twitch or to gag him, without the master-farrier's order; and that a young horse should never be twitched or struck. There are few horses that may not be gradually rendered manageable for this purpose by mildness and firmness in the operator. They will soon understand that no harm is meant, and they will not depart from their usual habit of obedience; but if the remembrance of corporal punishment is connected with shoeing, they will always be fidgety, if not dangerous.

This is a very serious vice, for it not only exposes the animal to occasional severe injury from its own struggles, but also from the correction of the irritated smith, whose limbs, and even whose life being in jeopardy, may be forgiven if he is sometimes a little too hard handed. Such a horse is very liable, and without any fault of the smith, to be pricked and lamed in shoeing: and if the habit should be confirmed, and should increase, and it at length becomes necessary to cast him in the trevis, the owner may be assured that many years will not pass ere some formidable and even fatal accident will take place. If, therefore, mild treatment will not correct the vice, the horse cannot be too soon got rid of.

Horses have many unpleasant *habits* in the stable and the road, which cannot be said to amount to *vice*, but which materially lessen their value.

Swallowing without Grinding.—Some greedy horses swallow their corn without properly grinding it, and the power of digestion not being adequate to the dissolving of the husk, no nutriment is extracted, and the oats are voided whole. This is particularly the case when horses of unequal appetite feed from the same manger. The greedy one, in his eagerness to get more than his share, bolts a portion of his corn whole. If the farmer can, without considerable inconvenience, so manage it that every horse shall have his separate division of the manger, the horse of smaller appetite and slower feeder would have the opportunity of grinding at his leisure, without the fear of his share being stolen from him by his neighbour.

Some horses, however, are naturally greedy feeders, and will not, even when alone, allow themselves time to chew or grind their corn. In consequence of this, they carry but little flesh; they are not equal to severe work; and, if their rack has been supplied with hay when the corn was put into the manger, their

stomachs will become distended with half-chewed and indigestible food; they will be incapable of exertion for a long time after feeding, and, occasionally, dangerous symptoms of staggers will occur. The remedy is, not to let such horses fast too long. The nose-bag should be the companion of every considerable journey. The food should likewise be of such a nature that it cannot be easily bolted. Chaff should be plentifully mixed with the corn, and in some cases, and especially in horses of slow work, should, with the corn, constitute the whole of the food. Of this we shall treat more largely under the article 'Feeding.'

In every case of this kind the teeth should be very carefully examined. Some of them may be unduly lengthened, particuly the first of the grinders; or they may be ragged at the edges, and may scratch and wound the cheek. In the first case the horse *cannot* properly masticate his food; in the latter he *will not:* for these animals, as too often happens in sore throats, would rather starve than put themselves to much pain.

Crib-Biting.—This is a very unpleasant habit, and a considerable defect, although not so serious a one as some have represented. The horse lays hold of the manger with his teeth, violently extends his neck, and then, after some convulsive action of the throat, a slight grunting is heard, accompanied by an apparent sucking or drawing in of air. Whether, however, air is actually drawn in, and thus the horse becomes more subject to colic than one without this trick, or whether a portion of air is expelled, showing the previous existence of flatulence and a disposition to colic, are points that have not been settled among veterinarians.

The horse is evidently making the edge of the manger a fixed point, by means of which he may overcome that obstacle which the formation of the soft palate and the back part of the mouth would present to either the expulsion or drawing in of the air, if accomplished through the medium of the mouth. When we consider, however, that any air expelled from the stomach might easily find a passage through the nostril, without the action of crib-biting; while it would be difficult or impossible, without some alteration in the natural form and action of the parts at the back of the mouth, and particularly the depression of the epiglottis or covering of the windpipe, to convey air to the stomach, we are inclined to conclude, that this fixed point is used to enable the animal to accomplish this alteration, and suck up and convey a portion of air into the stomach.

The effect of crib-biting is plain enough. The teeth are injured and worn away, and that, in an old horse, to a very serious degree; a considerable quantity of corn is often lost, for the horse will frequently crib with his mouth full of corn, the greater part of which will fall over the edge of the manger; and much saliva flows out while the manger is thus forcibly held, the loss of

which must be of serious detriment, as impairing the digestion. The crib-biting horse is notoriously more subject to colic than other horses usually are, and to a species difficult of treatment, and even dangerous. Although many a crib-biter is stout and strong, and capable of all ordinary work, these horses do not generally carry much flesh, and have not the endurance of others. On these accounts, crib-biting has very properly been decided to be unsoundness.

It is one of those tricks which are very contagious. Every companion of a crib-biter in the same stables is likely to acquire the habit, and it is the most inveterate of all habits. The edge of the manger will in vain be lined with iron, or with sheep-skin, or with sheep-skin covered with tar or aloes, or any other unpleasant substance. In defiance of the annoyance which these may occasion, the horse will in a very short time again attack his manger. A strap buckled tightly round the neck, by compressing the windpipe, will prevent the possibility of this action; but the strap must be constantly worn, and its pressure is too apt to produce a worse affection, viz. an irritation in the windpipe, which terminates in roaring.

Some have recommended turning out for five or six months; but this has never succeeded except with a young horse, and then rarely. The old crib-biter will employ the gate for the same purpose as the edge of his manger, and we have seen him gallop across a field for the mere object of having a gripe at a rail. Medicine will be altogether thrown away in this case.

The only remedy is a muzzle, with bars across the bottom; sufficiently wide to enable the animal to pick up his corn and to pull his hay, but not to grasp the edge of the manger. If this be worn a very long time, the horse may be tired of attempting that which he cannot accomplish, and may possibly for a while forget the habit; but in the majority of cases the desire of crib-biting will return with the power of gratifying it.

The causes of crib-biting are various, and some of them beyond the control of the proprietor of the horse. We have said that it is often the result of imitation; but it is more frequently the consequence of idleness. The high-fed and spirited horse must be in mischief, if he is not usefully employed. Sometimes, we believe not often, it is produced by partial starvation, whether in a bad straw-yard, or from unpalatable food. An occasional cause of crib-biting is the frequent custom of grooms, even when the weather is not severe, of dressing them in the stable. The horse either catches at the edge of the manger, or at the edge of the partition on each side, if he has been turned, and thus he forms the habit of laying hold of these substances on every occasion.

Wind-Sucking.—This bears a close analogy to crib-biting. It arises from the same causes; the same purpose is accomplish-

ed; and the same results follow. The horse stands with his neck bent; his head drawn inward; his lips alternately a little opened and then closed, and a noise is heard as if he were sucking. If we may judge from the same comparative want of condition, and the flatulence which we have described under the last head, either some portion of wind enters to the stomach, or there is an injurious loss of saliva. This diminishes the value of the horse almost as much as crib-biting; it is as contagious, and it is as inveterate. The only remedies, and they will seldom avail, are tying the head up, except when the horse is feeding, or putting on a muzzle, with sharp spikes towards the neck, and which shall prick him whenever he attempts to rein his head in for the purpose of wind-sucking.

Cutting.—Of this habit we have already spoken—and we would advise the owner of a cutting horse, without trying any previous experiments of raising or lowering the heels, to put on the cutting foot a shoe of even thickness from heel to toe, not projecting in the slightest degree beyond the crust, and the crust itself being rasped a little at the quarters; and to let that shoe be fastened as usual on the outside, but with only one nail on the inside, and that almost close to the toe.

Not Lying Down.—It not uncommonly happens that a horse will seldom or never lie down in the stable. He sometimes continues in apparent good health, and feeds and works well; but generally his legs swell, or he becomes fatigued sooner than another horse. If it is impossible to let him loose in the stable, or to put him into a spare box, we know not what is to be done. No means, gentle or cruel, will force him to lie down. The secret is that he is tied up, and either has never dared to lie down through fear of the confinement of the halter, or he has been cast in the night, and severely injured. If he can be suffered to range the stable, or have a comfortable box, in which he may be loose, he will usually lie down the first night. Some few horses, however, will lie down in the stable, and not in a loose box. A fresh, well-made bed will generally tempt the tired horse to lie down.

(*To be continued.*)

ART. LXII.—*On Gardening—No. 4; by* ALEXANDER GORDON.

[FROM THE GENESEE FARMER.]

Grafting.—This is the proper season when this operation ought to be performed. It is a mode of propagation applicable to most sorts of trees, and is adopted in order to conserve and multiply varieties which cannot be with certainty transferred to their offspring by seeds. It also enables us, in a much shorter period than could by any other means be effected, to substitute approved varieties of fruits on such trees as we have already in our gardens or orchards, but which have not equal merits. This art is by no means a recent discovery, but from what cause, or by what means it was discovered, is very unsatisfactorily accounted for. Chance is very likely to have originated the idea, in the manner that the *browsing of a goat gave the first idea of pruning* the vine; and as a fire, which accidentally burned a rose tree, according to Acosta, *(Histoire Nat. des Indes)* gave the first idea of performing the same operation on that highly esteemed ornament of our gardens. It is an operation, however, that depends for its success upon the property that buds possess, of shooting roots downwards and stems upwards, and of forming new layers of wood instead of subterranean fibres.

The success which will attend the *operation* of grafting, will much depend on the giving proper attention on placing the bark, particularly the *(liber)* inner bark of the stock and scion, as exexactly in contact with each other as possible, so that the line of separation of the wood and bark should, in both stock and scion, be accurately adjusted.

A grafted tree consists of two parts, the stock and scion. The latter, when inserted in a stock, identifies itself with it, and grows as if on its own natural stem and roots. My limits do not permit me to enter on the theory of grafting, but one part being so essential to success, deserves a notice. *The graft and stock must be species of the same genus, or at all events, genera of the same natural family.*

Scions should be shoots of last summer's growth, chosen from the *outside* branches of healthy trees; but if the tree from which the scion is taken be debilitated, it should be selected from the strongest shoots in the *centre* of the tree. Scions should be gathered some time before the operation of engrafting is performed. In preparing the scion for insertion, it should be kept in mind that the middle part of each shoot makes always the best scion—this part being uniformly found to produce the best bearing trees.

Performing the Operation.—There are various ways of performing the operation of grafting; but I shall confine myself to

a description of such modes of grafting as are best adapted for general purposes, and are most easily performed, which are *whip grafting* or *tongue grafting*, *cleft grafting* and *crown grafting*.

Whip grafting is the practice best calculated for small stocks or small branches of trees, and is consequently the method generally adopted in nurseries for propagating fruit trees. This mode of grafting can be best effected when the top of the *stock*, and the extremity of the *scion*, intended to be united, are of an equal or nearly equal diameter. It is performed thus: decide what height the stock is to be, then cut the stock and scion off obliquely at corresponding angles of an inch or more in length. Having performed this, cut off the top of the stock obliquely, or nearly horizontally; then make a slit nearly in the center of the sloped face of the stock, downwards, and a similar one in the scion upwards. This forms what is termed a tongue in the scion, and the same in the stock. Insert the tongue, or wedge-like process, forming the upper part of the sloping face of the scion, downwards in the cleft of the stock. Should the stock be larger than the scion, particular attention must be paid in uniting the inner barks on one side. As soon as this part of the operation is performed, take a ribband of bass, (matting the softest you can procure, and begin a little below the slit on the stock, tying it neatly and closely round the stock and graft, following the course of the sun, until you reach a little above the slit in the scion, when the matting must be neatly tied. The whole of this matting, and a portion of the stock and scion, must be covered with a composition of clay, or brick earth, to which has been added a fourth part of fresh horse dung, free from litter, and a small quantity of sand, with a small portion of cut hay, mixing the whole well together, and adding a little water; beat the whole on a board, or other hard substance, and as it becomes too dry, apply more water, turning it frequently over, beating and watering until it becomes flat and soft. This must be laid all round the bass or matting, about an inch and a half thick, or more in the centre, finishing this application in an oval or globular form with the hands, which must be frequently immersed in water to prevent the mixture adhering to them. When all is finished thus far, dip the hands in water, smooth the whole over, closing the materials effectually, so that neither light, wet, nor air can penetrate. This finishes the operation.

Cleft Grafting.—This method and the following, will be the best calculated for general purposes, where old trees are to be headed down and regrafted. The branch or stock is first cut off obliquely; then cut the slope part of the cut off horizontally near the middle of the slope; then, with a stout knife or a chissel, make a cleft of an inch and a half or two inches long in the crown downwards, at right angles to the sloped part. Great care must be taken in performing this operation, not to divide

the pith in the centre of the stem. Keep the cleft open by the knife or chissel, cut the scion with the grafting knife (which must be kept particularly sharp) into the form of a wedge, then cut an inch and a half in length, leaving it about the eighth of an inch thicker on the outer or bark side, bringing it to a fine edge on the side which will be the nearest to the centre of the stock. Then insert it into the opening prepared for it, withdraw the knife, and the stock will then firmly close upon it, and keep it in its proper place. If the stock is very large, it may be sawed off horizontally; smooth the section, and two, three, or more clefts may be made and scions inserted in each, tie with bass and clay as directed for *whip grafting*.

Crown Grafting is the last method of grafting which I shall here describe. The period for performing *crown grafting* should be later than that for either *whip* or *cleft* grafting, it being absolutely necessary for the sap to be so far in motion that the bark will easily separate from the wood of the stock when the graft is to be inserted, as the scion in crown grafting is not inserted *in* the wood, but *between* the wood and the bark of the stock. First cut or saw the stock or branch about to be grafted off horizontally, pare the top smooth; then, having the scion, cut it flat or a little sloping, an inch or a half in length, forming a shoulder at the top of the cut or slope. In performing this method of grafting, it is necessary to have a piece of hard wood, (six or eight inches long, and three-fourths of an inch thick at the thickest or handle end) or if there is much grafting it should be iron, which must be formed in a tapering shape with one side flat, the rest regularly rounded. Make an incision in the bark or rind of the stock about two inches long; then raise the bark from the stock by means of the above semi-wedged stick or iron, entering it at the top of the incision in the bark, keeping the rounded side outwards, and the flat side to the wood of the stock; having done this, insert the scion with the cut side next to the wood, thrusting it down until the shoulder rests very closely on the top of the stock. If the stock is large, several may be inserted as directed for *cleft grafting*. Tie and clay as before explained.

I hope I have made these directions for grafting sufficiently explicit for those who are not acquainted with the operation. This is all I have aimed at, and shall therefore proceed to another subject which particularly demand an attention at this season.

On planting Fruit Trees.—Where orchards or gardens are to be planted this spring, the sooner the operation is performed the better. There are several points connected with the mode of planting a tree properly, which deserve our attention, for on them our ultimate success will very much depend. The first is to use every caution and care to *preserve the fibrous roots entire*, on the removal of the tree. The next is forming a hole to receive

it *more than sufficient* for the roots when extended. The third point is to dig the hole *considerably deeper* than it is to be when the tree is placed in it, and if the original soil is not good, fill the hole with a proper soil to such a depth that the tree shall be planted *no deeper* than it stood in its original situation. This latter is a most important point in the planting of a tree, and should never be departed from when planting apples, pears, plums, peaches, nectarines, cherries, quinces, or such trees as belong to this tribe. For vines it is immaterial, as the vine will emit fibres from every eye or bud, thereby converting every part of the vine, which may be buried in the ground, into a part of its root. I again repeat the utmost attention should be paid to this important point. I insist on it the more, from having frequently seen gardeners and others treat it with indifference.* The next point to be attended to, is to place the tree in its proper place, keeping the same side towards the sun as has been growing in its former situation; then *distribute the fibrous roots regularly* around the stem, placing them as far as possible in a horizontal position, or with a slight inclination downwards. In placing the soil round and among the fibres, it should be regularly *shaken* off the spade, giving at least half a dozen shakes to each spade of mould. Planting should be attended with copious waterings, from a watering pot with a rose, *during the operation*, by no means *immediately after it is performed.* After the last watering has been applied, allow it to remain until the earth has absorbed the water; then cover with soil to the proper depth;

* I trust I shall not be accused of presumption in finding fault with gardeners or others on this point, but I am so convinced, from practice and observation, of the injuries which result from *deep planting*, that I considered it proper to advance my opinion in strong terms on the subject; although I have, at a former period of my life, lost the opinion of individuals as to my being a gardener, by adhering to shallow planting. The manner of my doing so was as follows: during a sojourn among the *Creek Indians*, within the limits of the State of Alabama, in the spring of 1828, at the house of the United State's Agent to that tribe, I one day discovered a most beautiful and symmetrically formed Cupressus thyoides (white cedar) on the banks of the river *Chatahootchie*. On directing the attention of the Agent, Col. Crowel, to this handsome specimen, he determined to remove it to a conspicuous place in his own garden. I was to superintend the operation. Several Indians and negroes were assisting. The work went on very satisfactorily in taking up the tree, and removing it with difficulty several miles; but when I placed it in its new abode, and commenced placing the fresh soil among its fibres, I was astonished at the gesticulations of a venerable old Indian, with the words "*courst tcha, courst tcha,*" (no good, no good,) very significantly pronounced. Desirous of learning the cause, I inquired what was my error in the opinion of this son of the forest; when, through an interpreter, I found that some years previous, this same Indian had witnessed a similar operation, and although the tree was planted so deep, which depth he extending his arm in a horizontal position, still *it* died. How then was it possible for mine to survive? But I preceeded in my own way; however, I found afterwards, in so doing, after this warning, my knowledge of transplanting trees, was considered ever after, by the old man in particular, as "*courst tcha, courst tcha.*"

this will leave the soil on the surface open, and prevent it from forming into a crust, which is very injurious to a newly planted tree.

I am, respectfully,

ALEXANDER GORDON.

Rochester Nursery, Main-st., April 1, 1833.

Art. LXIII.—*Strawberries.*

[FROM THE GENESEE FARMER.]

From the very large size of some varieties of this fruit, which have been lately introduced into our gardens, their cultivation is more attended to now, than it was a few years since, and such has been the success of cultivators that strawberries measuring from three to five inches in circumference, are now to be found in most of our well regulated gardens.

From the new impulse given, for an extension of their culture, by the frequent publications which appear in our agricultural journals, of the productive qualities of some varieties, and the size and flavour of others, it is to be expected that many will meet with disappointments at first, arising from a want of knowledge of the varieties obtained, or the manner of treatment, after obtaining them, in order to make them productive.

Unless a person has some knowledge of their culture it is useless to obtain choice varieties, as when neglected they amount to little more than troublesome weeds, producing but little fruit and that of inferior quality, and on the contrary when well selected and properly managed, they afford one of the finest deserts brought to the table.

The most common cause of disappointment is the time of procuring, or setting out the plants and next to that, the varieties procured.

Although a strawberry plant will continue several years, yet we consider it in greatest perfection in this climate, the second year, and we think when treated as a biennial will be found most profitable. As the quantity of fruit produced by a plant will depend much upon its growth the previous year, after being transplanted it is important that they should be removed as early in the season as the young plants from the runner have made sufficient roots, to allow them to be separated. The beds for

the reception of the young plants should be prepared by spading and manuring as early as the forepart of July, and by the last of the month the young plants will be fit to be planted out.

We would recommend the beds to be made about two and a half feet wide, and two rows to be set upon each at the distance of eighteen inches each way.

The varieties which we have found to be most productive are the Austrian Scarlet, and Ronseberry, but the size of the Methven Castle, renders it desirable, although not quite so productive. Keen, Seedling is a valuable variety. The large Scarlet Lime, Downton, Hudson's Bay, Black, and Musk Hautbois, although they produce some large berries yet they are not as productive as the first mentioned. The first three varieties will give a succession of fruit for four weeks, and if to these we add the alpines which continue to produce fruit until winter, we are not aware that any other varieties are required to complete the suite.

Where raising the fruit is the only object, the runners should be cut off and the ground kept free from weeds. Where the ground is kept loose, the fruit will have more or less dirt upon it, but this is removed without injuring the flavour of it, by putting it in a colander and pouring a little water upon it.

Strawberries thrive best on ground rather moist than dry, and we think, if replanted every year as soon as the fruiting season is past, with young plants, the ground will produce more fruit than when they are allowed to remain two years.

Art. LXIV.—*Amelioration of Fruits.*

[FROM THE NEW-ENGLAND FARMER.]

Mr. Fessenden,—Will you permit me to make a few suggestions and remarks in your paper on the ideas that have been advanced upon fruit and fruit trees, and particularly the amelioration or introduction of new fruits. In the 8th vol. of the N. E. Farmer, p. 21, was published a memoir by Professor Poiteau, containing what appeared to be considered as a new discovery in relation to the production of new varieties of fruit. It was translated by the able and accomplished President of the Massachusetts Horticultural Society, to whom may I be allowed to pay a passing tribute of respect, and to express the hope that

he may not relinquish the delightful scenes of the garden, to mingle in the stormy arena of political life. Although the talents of Gen. Dearborn qualify him to shine in any sphere, yet, may he not rather leave the maintenance of the great principles and interests of our government to the Websters and Everetts, and let his be the more peaceful, exalted and enduring fame of Duhamel, of Evelyn, of meek Isaac Walton, of Knight and Van Mons. Having mentioned Isaac Walton, allow me to grace the pages of your journal with a quotation from Wadsworth's Ecclesiastical Sketches, in which Walton's biographical pieces are extolled in some of the sweetest strains to be found in the compass of English poetry.

> "There are no colours in the fairest sky
> So fair as these. The feather whence the pen was shaped
> That traced the lives of these good men
> Dropped from an angel's wing. With moisten'd eye
> We read of faith and purest charity
> In statesmen, priest and humble citizen.
> Oh, could we copy their mild virtues, then
> What joy to live, what blessedness to die!
> Methinks their very names shine still and bright,
> Apart like glow worms in the woods of spring,
> Or lonely tapers, shooting far a light
> That guides and cheers,—or seen like stars on high,
> Satellites turning in a lucid ring
> Around meek Walton, heavenly memory.'

To return to the subject of fruits. Notwithstanding the authority in support of the views of Professor Poiteau, I cannot perceive the correctness of the principles or reasoning on which they are based. He maintains (if I correctly understand him,) that in order to produce the best varieties of fruit, particularly pears, that instead of sowing the seeds of the best varieties we should, on the contrary, sow the seeds of the poorest and most austere sorts; and, as a reason for this practice asserts, "that it is progressively and slowly that she" (nature) "grants us what we demand of her, while she receives back, and immediately again causes to re-enter her domain, the ameliorated fruits which we," &c. In support of this doctrine he appeals to the results of nature in his country particularly, and likewise to the practice of Van Mons, and other Dutch Pomologists.

As to the results of nature in this country, whenever the origin of improved varieties of fruits is known, it has been, I believe, generally derived from the ameliorated varieties, and when not known, has generally been ascribed to the same source. Neither does the practice of Van Mons, as far as I have learned it, bear him out in his new views. In one statement I have seen of the process of Van Mons in raising new ameliorated fruits, he is asserted to take the seeds promiscuously, without regard to the quality of the fruit. He indeed says, according to another account, that the seeds of the new varieties are more likely to

produce fruits of good quality than the seeds of the best old established kinds, but this, if true, may be explained upon another principle, which I shall presently state, much more rational than that adopted by Professor Poiteau. Indeed, does not the doctrine of Professor Poiteau carry an absurdity in its very face, for on his theory when a species of fruit has become improved to a certain degree by successive ameliorations, it immediately returns by reproduction to its original austerity. Nay, he further requires us to believe that all our cultivated sorts have arrived at that particular, (and of course the same) point of amelioration, the contrary of which we well know; and of course upon his theory those which have not arrived at this point should continue to improve by reproduction, and thus destroy the practical inference which he deduces from his theory, or rather disprove the facts from which he incorrectly draws his theory. It is at war also with the analogy of other modes of vegetable and animal existence in which it is a general law that like produces like. What should we think of a gardener who should direct us to save the seeds of the poorest vegetables to plant and sow instead of the best. It is contrary to the opinions of distinguished writers on vegetable physiology and œconomy. Sir Humphrey Davy in his Agricultural Chemistry, remarks, "A hundred seeds of the Golden Pippin will all produce fine large leaved apple trees bearing fruit of a considerable size, but the tastes and colours of the apples from each will be different, &c. All, however, will be much more perfect than those from the seeds of a crab, which produces trees all of the same kind, and all bearing sour and diminitive fruit."

That the seeds of young and healthy varieties will be more likely to produce good fruit than those of old and decayed varieties of the same quality "reposes upon well attested analogies" and is doubtless true. This is distinctly affirmed by Mr. Knight, and it is also asserted by a writer in your paper, to be the opinion of Mr. Van Mons, and it is probably the ground of his extraordinary success, connected with the discovery that the product of a tree the first year of its bearing affords no fair criterion of the future merit of the fruit. This doctrine will explain the opinion of Van Mons before adverted to, that the seeds of new varieties are more likely to produce good fruit than the seeds even of the best old established sorts.

The variation of fruits produced from seed affords an interesting subject for speculation to the horticulturist and vegetable physiologist, and is well worthy of careful examination and more extended experiment. From all the well attested facts that have come to my knowledge, I am inclined to believe that nature acts by no fixed rules in the production of varieties of the same species. By some it is supposed to be caused by an admixture of the pollen of different varieties, which causes the offspring to

vary from the parent, but if this were the case, how did the first varieties originate? There is probably a difference in the tendency of different varieties to break into other varieties, as we know there is in the species, and this may account for the facts that have led persons to suppose that the seedling would produce the same fruit as the parent were there no admixture of the pollen. Every one knows that the fruit of a seedling peach is much more likely to produce fruit similar to that of the parent than that of the apple. William R. Prince, Esq., a high authority on such subjects, in describing a certain kind of peach, states that it possesses the quality of producing very nearly the same fruit from the seed.

It will be seen that I have rather intimated my belief in the theory of Mr. Knight, concerning the deterioration of fruits by age. As, however, it is a matter of great practical importance to cultivators of fruits and fruit trees, I could wish, notwithstanding, the subject was formerly discussed at considerable length in your columns, to see the opinions of some of the most distinguished cultivators, together with some additional facts as might be adduced in support of them. It is generally believed in this part of the country that what is here called the Bell pear (which I suppose to be the same with the Summer Bon Chretien is nearly run out, as it seldom produces any good fruit, and this is the fact, as well of the young as of the old trees.

Why is it that the Kentish morello, or common cherry, thrives so badly and seldom produces any fair fruit? Is it owing to its having been propagated from suckers, or is this also one of the varieties approaching the nihility of old age. I observe, however, they produce much better in the more recently settled parts of the country.

Although this communication has extended to an unexpected length, yet I cannot dismiss the subject without referring to the facts, shown by an examination of it, that are of practical importance to the cultivators of fruits from the seed and these are, to sow the seeds of varieties known to be young and vigorous; and other circumstances being the same, viz. age, vigour of growth, &c. to prefer the seeds of good fruits, especially of large and fair kinds, to those of an opposite quality; and not to be discouraged by the first product not answering your expectations, but to wait a year or two or more, for the fuller developement of the qualities of the fruit. Engrafting the seedling on an older stock likewise appears to hasten the production of fruits. Attention is also to be paid to the varieties sown, as it is rendered quite probable that seedlings of some varieties of all fruits will approximate more nearly to the parent than of others.

Berlin, Ct. Dec. 24, 1832. **M. S.**

Art. LXV.—*Water, its Use in Vegetables, &c.*

[From the New-England Farmer.]

We have been requested by a subscriber to give some remarks on the uses of water in agriculture and the means of its artificial application.

In the first place we would remark that it is not advisable to let theoretical speculations on the advantages of irrigation induce a cultivator to incur great expenses in counteracting natural deficiencies of soil, &c. Where grounds are free from perennial springs or low marshes, excess of moisture, may with proper management, be turned to certain profit. It is not very difficult to make a provision to drain off an excess of water; but where the soil is naturally too dry, moisture cannot often be supplied by art, in sufficient quantities for agricultural purposes, but by an expense, entirely inconsistent with the economy of farming.

Perhaps the best possible mode of watering plants in most cases is to attract the requisite moisture from the atmosphere. That water exists in the atmosphere may be proved as follows: If some of the salt called muriate of lime that has just been heated red, be exposed to the air, even in the driest and coldest weather, it will increase in weight and become moist; and in a certain time will be converted into a fluid. If put into a retort and heated, it will yield pure water; will gradually recover its pristine state; and, if heated red its former weight; so that it is evident, that the water united to it was derived from the air. And that it existed in the air in an invisible and elastic form, is proved by the circumstance, that if a given quantity of air be exposed to the salt, its volume and weight will diminish, provided the experiment be correctly made.

The quantity of water which exists in air as vapour, varies with the temperature. In proportion as the weather is hotter, the quantity is greater. At 50 degrees of Fahrenheit, air contains about one fiftieth of its volume of vapour; and as the specific gravity of vapour is to that of air nearly as 10 to 15, this is about one-seventy-fifths of its weight.

At 100 degrees supposing that there is a free communication with water, air contains about one-fourteenth part of vapour in volume, or one-twenty-first in weight. It is the condensation of vapour by diminution of the temperature of the atmosphere, which is probable the principal cause of the formation of the clouds, and of the fall of dew, mist, snow or hail.

Now in order to moisten the earth in a dry time we have only to obtain moisture from the air, which is a great reservoir of moisture, existing in most abundance, in the hottest weather.

This moisture can only be artificially obtained by attraction or causing it to be absorbed by some other substance. It may be absorbed either by the soil, the manure, or the plants themselves for whose nourishment it is required. With regard to the power of the soil to absorb water, by what is called cohesive attraction, this depends in some measure on the division of its parts. If the earth be hard, and its particles as it were *welded* together, it will attract but little moisture from the air, dews, &c. and even the rains will run off without penetrating the surface. Thus a foot path over a field in dry weather will be dryer than the untrodden soil on its borders, and the more you stir a soil, other things being equal, the less will it suffer by drought.

Sir Humphrey Davy observes that, "the power of the soil to absorb water by cohesive attraction depends in a great measure upon the state of division of its parts; the more divided they are, the greater is their absorbent power. The different constituent parts of soils likewise appear to act even by cohesive attraction, with different degrees of energy. Thus vegetable substances appear to be more absorbent than animal substances; animal substances more so than compounds of alumina and silica, [clay and sand] and compounds of alumina and silica more absorbent than carbonates of lime and magnesia: their differences may, however, possibly depend upon the differences in their state of division and the surface exposed.

"The power of soil to absorb water from air is much connected with fertility. When this power is great, the plant is supplied with moisture in dry seasons; and the effect of evaporation in the day is supplied by the absorption of aqueous vapour from the atmosphere, by the interior parts of the soil during the day, and by both the exterior and interior during the night. The stiff clays approaching to pipe clays in their nature, which take up the greatest quantity of water when it is poured upon them in a fluid form, are not the soils which absorb most moisture from the atmosphere in dry weather. They cake and present only a small surface to the air; and the vegetation on them is generally burnt up almost as readily as on sands. The soils most efficient in supplying plants with water by atmospheric absortion, are those in which there is a due mixture of sand, finely divided clay, and carbonate of lime, with some animal or vegetable matter, and which are so loose and light as to be easily permeable by the atmosphere.

From the foregoing premises, it is apparent that one mode of *watering plants*, is to *hoe* them and keep the ground in a finely *pulverized state* about their roots. The leaves of living plants likewise attract the water held in solution in the atmosphere. Some vegetables increase in weight from this cause, when suspended in the atmosphere and unconnected with the soil; such are the house leek, and different specie of the aloe. In very in-

tense heats, and when the soil is dry, the life of plants seem to be preserved by the absorbent power of their leaves; and it is a beautiful circumstance in the economy of nature, that aqueous vapour is most abundant in the atmosphere when it is most needed for the purprses of life, and that when other sources of supply are cut off this is most copious."

Dr. Deane observed, "vegetables that are newly transplanted, as they have their roots more or less diminished or otherwise injured, often need watering till they have taken new root. But this should be done with caution. If a dry season follow the transplanting, let them be watered if they appear to droop, only on evenings, and in cloudy weather, and with water that has been exposed one day, at least, to the shining of the sun; not with water directly from a well, or a cold spring, as it will give a chill to the plants. Only a small quantity should be applied at once, that it may have an effect similar to that of a refreshing rain. For water applied too plentifully, sometimes washes away the finest of the mould from the roots; or makes little cavities about them which admit too much air.

"In a dry season, whole gardens sometimes need watering; and in doing it the above precautions are to be regarded. They are happy who have a piece of standing water in their garden or a rivulet near at hand, from whence the garden may be watered without much labour."

A copious supply of water is very essential to a good kitchen garden. Loudon remarks that "many kitchen crops are lost, or produced of very inferior quality, for want of watering. Lettuces and cabbages are often hard and stringy; turnips and radishes do not swell; onions decay; cauliflowers die off; and in general, in dry seasens, all the *cruciferæ* (plants whose flowers consist of four petals placed in the form of a cross) become stinted or covered with insects even in rich and deep soils. Copious waterings in the evenings, during the dry season, would produce that fulness and suculency, which we find in vegetables produced in the low countries, and in the marsh gardens at Paris, and in England at the beginning and latter end of the season. The vegetables brought to London market from the Neat's Houses, and other adjoining gardens where the important article of watering is much more attended to than in private country gardens, may be adduced as affording proofs of the advantage of the practice."

With regard to the quality of water used for irrigating land and watering plants there has been some disagreement, some preferring hard and others soft water. But in this as in many other cases no general rules can be laid down which do not admit of many exceptions. Sir Humphrey Davy says, "when the water used in irrigation has flowed over a calcareous bed, it is generally found impregnated with carbonate of lime; [the most

common cause of what is called hardness in water] and such water tends in that respect to ameliorate a soil in proportion as any of the modifications of lime and charcoal were deficient: but where these are already in excess, water charged with a lime sediment should be withheld; while water impregnated with sand, clay, gypsum or particles of iron would be beneficial.

"Common river water generally contains a certain portion of the constituents of vegetable and animal bodies; and after rains this portion is greater than at any other times; it is habitually largest, when the source of the stream is in a cultivated country.

"In general, those waters which breed the best fish are the best fitted for watering meadows; but most of the benefits of irrigation may be derived from any kind of water, provided the soil be not already overcharged with the prevailing ingredients in the deposit left by the water; and provided, on the other hand, that the matter of the soil and the matter of the deposit are not pernicious when combined. These are the general principles:—1. That waters containing ferruginous impregnations [particles of iron] tend to fertilize a calcareous soil. 2. Ferruginous waters are injurious on a soil which does not effervesce with acids, which is one of the tests of the presence of lime. 3. Calcareous waters which are known by the earthy deposit they afford when boiled, are of most use on siliceous (sandy) soils, or other soils containing no considerable portion of carbonate of lime."

PART III.

MISCELLANEOUS INTELLIGENCE.

At the Anniversary of the *Agricultural Society of South-Carolina*, held on the 20th of August, the annual Oration was delivered by D. K. WHITAKER, Esq. which we hope to lay before our readers in the next Number of this journal.

The following Gentlemen were elected Officers for the ensuing year:

JOHN HUME, *President.*
HUGH ROSE, *Vice-President.*
CHARLES E. ROWAND, *Secretary.*
ELIAS HORRY, *Corresponding Secretary.*
HENRY F. FABER, *Treasurer.*
R. W. ROPER, *Orator.*

Asparagus.—"*Folks say,*" that asparagus is a marine vegetable, and that salt is its natural element, and that brine of all kinds may be freely used upon it, from ham pickle to fish brine—and folks say, too, that boring a tree and inserting sulphur will destroy all noxious vermin about it—and that any kind of cutting, stuck into a potato and put in the ground will grow—and a thousand other *says* all of which go the rounds of the papers once a year; and being fully convinced that there are divers other bugs besides curculio and yellow bugs, we in our operations have found it beneficial to try these things. And *mirable dictu*, we find the asparagus story true, having this spring used all kinds of pickle, from a watering pot, as freely as we would water in case of drought. It does not injure it in the least; not even the ten thousand young plants from last year's self sown seed. It also operates as a kindly opiate on *chick weed* that interminable pest to all shaded grounds, causing it to forget to rise with the sun—it has evaporated; and in fact most other weeds follow suit, merely out of complacency, we presume, as misery is gregarious and loves company.—*Genesee Farmer.*

Rhubarb Pie.—The Rhubarb root, which makes such rich and delicious pies, will grow doubly well by placing an empty barrel over it. A friend of ours had two plants by the side of each of other. To test the fact, he placed a barrel over one, and left the other uncovered At the expiration of a fortnight, the covered one had extended itself beyond the top of the barrel, while the other by its side had grown, perceptibly, but very little. One plant served in this manner, will supply the largest family with materials for delicious Rhubarb pies.—*Northampton Courier.*

Chick in the Egg.—The hen has scarcely sat on the egg twelve hours, when we begin already to discover in it some lineaments of the head and body of the chicken that is to be born The heart appeared to beat at the end of the day; at the end of forty-eight hours, two vesicles of blood can be distinguished, the pulsation of which is very visible. At the fiftieth hour, an auricle of the heart appears, and resembles a lace, or noose folded down upon itself. At the end of seventy hours we distinguish wings, and on the head two bubbles for the brain, one for the bill, and two others for the forepart and hindpart of the head—the liver appears towards the fifth day. At the end of one hundred

and thirty-one hours, the first voluntary motion is observed. At the end of one hundred and thirty-eight hours the lungs and stomach become visible—at the end of one hundred and forty-second hour, the intestines, the loins, and the upper jaw The seventh day, the brain, which was slimy, begins to have some consistence. At the one hundred and ninetieth hour of incubation, the bill opens, and the flesh appears in the breast. At the one hundred and ninety-fourth hour, the sternum is seen, that is to say, the breastbone. At the 210th, the ribs come out of the back, the bill is very visible, as well as the gall-bladder. The bill becomes green at the end of 236 hours; and if the chick is taken out of its covering, it evidently moves itself. The feathers begin to shoot out towards the 240th hour, and the skull becomes grisly. At the 264th, the eyes appear. At the 288th, the ribs are perfect. At the 331st, the spleen draws near to the stomach, and the lungs to the chest At the end of the 355 hours, the bill frequently opens and shuts: and at the end of 451 hours, or the 18th day, the first cry of the chick is already heard—it afterwards gets more strength, and grows continually, till at last it sets itself at liberty, by opening the prison in which it was shut up. Adorable wisdom of God! It is by so many different degrees that these creatures are brought into life. All these progressions are made by rule! And there is not one of them without sufficient reason. No part of its body could appear sooner or later, without the whole embryo suffering, and each of its limbs appear at the most proper moment. This ordination, so wise, and so invariable in the production of the animal, is manifestly the work of a Supreme Being —*Amer. Far.*

Drink for Horses.—Some of the Inkeepers on the western road have adopted the practice recommended by a member of the Bath Agricultural Society, of boiling the corn given to horses, and giving them the water to drink. It is most satisfactorily ascertained that three bushels of oats, barley, &c. so prepared, will keep the horses in better condition for working than double the quantity in a crude state.—*N. E. Far.*

Quince Trees.—Messrs. Editors—In the 1st vol. p. 380. of the *Genesee Farmer*, I noticed an article on the subject of injury, and final destruction, of Quince trees by worms. For the benefit of your correspondent and all others concerned in cultivating the Quince, I will give the result of actual experiment.

In the spring of 1823, I procured some trees of the Orange or Apple Quince, and set them in rather moist, rich soil. They all lived, and as they were of a good size, soon commenced bearing. I saw an article in some work, recommending coal dust, or the dirt from the bottom of a coal pit, to be put around Quince trees I tried the experiment, and it succeeded equal to my most sanguine expectations. While my trees were doing well, a neighbour suggested the plan of manuring trees, and (like the man who was well, but took medicine to be better,) I manured my trees, but not long after discovered worms or grubs in them, near the top of the ground, and in cutting them out, injured the trees so much that they all died but one, and that is a poor sickly one.

The next year, 1824, I set other Quinces of the same sort, and have kept the coal dust around them altogether, and the result is, the trees are uncommonly thrifty, good bearers, produce very large and fair fruit, and I have seen no appearance of the grub. My plan is to renew the dirt, say once in two years, first scraping away the old dirt, and putting on a bushel or two of fresh.

Yours, &c. C. of Starkly.—*Gen. Far.*

Culture of the Carnation—The flowers are propagated either by seed or by layers; the first is the method for raising new flowers; the other is the way to preserve and multiply those of former years. To raise them from seed; that from the best double flowers should be selected, which will produce the strongest plants, and should be sown in April in pots or boxes of fresh light earth, mixed with rotten cow manure, exposed to the morning sun, and occa

sionally watered. In a month the plants will appear, and in July should be transplanted into the beds of the same earth, in open airy situation, at six inches distance, and there left to flower. When in flower, the finest kinds should be marked, and all the layers that can be, should, during the time of flowering, be laid down from them; these will have taken root by the end of August, and are then to be taken off and planted out in pots in pairs.—E. RUDGE, Esq. F. S. S.—*Lou. Gard. Mag.*

Cultivation of the Dahlia, or Georgina.—Few of our most rustic plants exact less care than this splendid native of Mexico. Indeed so simple is its culture that it is already widely disseminated in every part of Europe, as well as in the West-Indies, South-America, &c. in all of which it has been found to succeed. It will thrive in any good soil, but as is the case with other plants held in great estimation, amateurs bestow more care to its culture than is absolutely required, and have adopted particular rules for that object. The roots are tuberous, and towards the last of April they begin to push out young shoots at the base of the stem of the previous year. At this period, or rather earlier, they should be planted; they will however succeed perfectly well if this is deferred till June but will not come so soon into flowering.

The course we have adopted for its culture, although extremely simple, has been eminently successful, and the directions we shall now give are in accordance therewith.—Make the ground mellow to the depth of eighteen inches, digging in at the same time a liberal supply of manure. Plant the dwarf kinds at three, and the tall ones at four feet distant; and before placing the roots, dig in a shovel-full of manure at the top of each hole destined to receive them. The root should be placed two inches beneath the surface—measuring from the base of the old stem. Most persons allow but one stalk to grow, and of course select the strongest—cutting away the weaker ones. When planted along a walk or avenue, a triple range presents a very beautiful appearance, the most dwarf being selected for the first row, those of greater stature for the second, and the tallest for the third row—indeed this manner of arrangement may be extended to five or six rows. Another mode is to plant them in clumps, either circular, square, or as the taste may suggest, the tallest varieties being selected for the center. In either of these arrangements, a judicious selection of the various colors is requisite, in order to unite to their brilliant display, the advantage of a tasteful combination.

When the plants are about a foot high, a pole should be placed by each, proportioned to the usual height it attains, which should be driven into the ground about a foot from the stalk, so as not to interfere with the roots. The poles or stakes will necessarily vary from three to eight feet in height above the surface; and to be firmly placed should penetrate the ground from twelve to eighteen inches. Those for the taller plants will require of course to be of greater thickness and strength than such as are designed for the more dwarf varieties. The work of driving the poles may be more easily effected immediately after a rain, when the ground is moist.

As the plants advance in growth, it will become necessary to tie the stalks firmly to the poles to guard against the effects of winds and storms. For this purpose common bass matting, or any other soft ligature is to be preferred. The branches being extremely brittle are subject to be broken in severe gales when not well supported. Some persons train their Dahlias on a trellis, which affords security to every branch, and presents at the same time a fine effect. It is only in very exposed situations that the extreme caution is required of tying every branch; and in cities and other well sheltered locations far less care will suffice in this respect. It is deemed beneficial to trim off the lateral shoots nearest the ground, to a certain height in proportion to the growth of the plant; say for dwarfs twelve inches, and for other varieties eighteen, increasing to twenty four inches for the tallest. Some cultivators thin out about half the number of upper branches, in order to add to the strength of the remaining ones, and to increase the size and beauty of the flowers.—*Prince's Catalogue*.